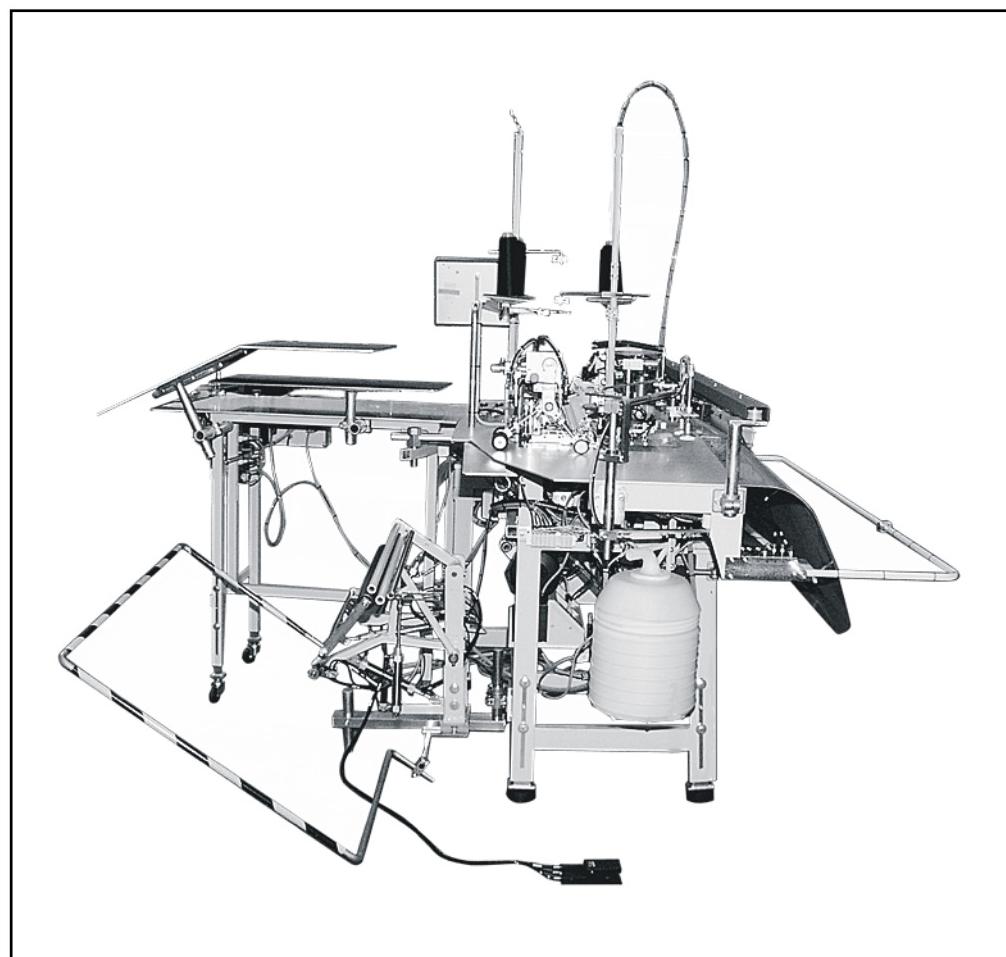




Working Instructions

Working Instructions Automatic Multi-Head Serging Machine **1360-1365/4**



Valid: 06-2002 A

Contents of the working instructions

The working instructions are divided into four sections:

A. General notes

Safety instructions for the operating and service personnel and for the operator of the machine.

B. Operating instructions

Instructions for the personnel operating and handling the machine.

C. Service instructions

Instructions for the personnel in charge of the initial start-up, setting up and service of the machine.

D. Programming instructions

Instructions for the service personnel in charge of preparing and setting up the machine.

Scope of the working instructions

These working instructions describe the AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4 of Beisler GmbH and apply only to those machine parts and components that are standard equipment of the AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4.

They do not apply to accessories or machine parts (e.g. sewing head) from third parties that the machine is equipped or retrofitted with. For those components, the working instructions of the respective manufacturer or supplier apply.

Section A

General notes

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A.1 Safety instructions

A.1.1 Exclusion of liability

Beisler GmbH warrants the faultlessness of the product as set forth by their advertisement, product information and these working instructions. Other product characteristics are not warranted.

Beisler GmbH is not responsible for the profitability or for the correct function of the automatic multi-head serging machine 1365-4 if it is used for other purposes than those defined in section „Correct use“.

Beisler GmbH is not responsible for damage that arises from the use of non-defined and non-approved spare parts or accessories.

A.1.2 Copyright

© 2002 Beisler GmbH, Hösbach

Automatic multi-head serging machine

The automatic multi-head serging machine 1365-4 and all related parts are protected by copyright. Any reproduction of the machine will be prosecuted.

Working instructions

These working instructions are protected by copyright. No part of the working instructions, including figures and tables, may be reproduced or translated in any form or by any means, electronic or mechanical, without the express written permission of Beisler GmbH.

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A.1 Safety instructions

A.1.3 Important information for the operator!

This machine has been manufactured in keeping with the latest technological developments and is operationally safe. However, it may present potential hazards, particularly if it is operated by inadequately trained personnel or if it is not used correctly:

- For personnel operating and handling the machine, the operator must prepare written instructions in a reasonable form and in the language of the operating personnel based on these working instructions (Germany: Accident Prevention Regulations UVV VGB 1 § 7.2).
- Use the operating instructions to familiarize the operating personnel with the functions, operation, and care of the machine and check to see if the operating personnel fully understands these instructions.
- Use the service instructions to familiarize the service personnel with the setting up and maintenance of the machine.
- For any modifications of the machine that have not been approved by Beisler GmbH in writing, the operator is fully responsible.
- The contents of the working instructions are subject to change without further notice.
- Concerning translations into foreign languages, the German version of these working instructions is binding.
- Should you encounter problems that are not mentioned in these working instructions, please contact your supplier immediately for your own safety. Please do not hesitate to contact Beisler if you have any suggestions that help to improve this product.
- **Keep these working instructions close to the machine so that safety instructions and information on operation, setting-up, and maintenance are always accessible.**

Warranty

Beisler GmbH warrants the safety, operability, and repair without charge of the automatic multi-head serging machine 1365-4 for a period of 6 months under the condition that:

- the machine is used exclusively for the intended purpose and serviced in accordance with the information in these working instructions,
- modifications of the machine are carried out only with prior written approval of Beisler GmbH,
- only original spare parts or accessories approved by Beisler GmbH are used. For a complete list of all approved spare parts, please contact Beisler GmbH.

If the machine is used for more than 10 hours per day (shift operation), the warranty period is reduced to 3 months.

The warranty period starts with the delivery of the machine to the operator.

A.1 Safety instructions

A.1.5 Important information for the operating personnel!

Please note that any work to the automatic multi-head serging machine 1365-4 must be carried out only by trained operating personnel:

- Operating personnel means persons:
that have been given initial instructions for sewing automats and that have been trained for the operation and handling of the automatic multi-head serging machine 1365-4 on the basis of these operating instructions,
that have been informed about potential risks arising from their work with the machine,
that are capable of assessing their work with the machine due to occupational experience and instruction of the safety regulations and of recognizing potential hazards during work,
- Cleaning of the machine or of machine parts must be performed only by personnel that has been informed about potential hazards arising during the cleaning work.
- Prior to the initial operation of the automatic multi-head serging machine 1365-4, read the operating instructions carefully so that you can make full use of the advantages of the machine and to prevent damage.

A.1.6 Important information for the service personnel!

Please note that service work to the automatic multi-head serging machine 1365-4 must be carried out only by authorized and adequately trained expert personnel:

- Expert personnel means persons:
that have acquired their expertise by a special training in machine technology or electrical engineering or by a special advanced training or a comparable qualification,
that have acquired the knowledge required to perform all works for setting up and servicing the automatic multi-head serging machine 1365-4 from a training by Beisler GmbH,
that are capable of assessing their work with the machine due to occupational experience and instruction of the safety regulations and of recognizing potential hazards during work.
- Prior to carrying out any service work to the automatic multi-head serging machine 1365-4, read the entire working instructions carefully so that you can make full use of the advantages of the machine and to prevent damage.

A.2

Explanation of symbols

A.2.1 Symbols used in the working instructions



WARNING!

is used if non-observance may cause serious or even lethal injuries.



CAUTION!

is used if non-observance may cause medium to minor injuries or damage.



NOTE!

is used for hints and useful information.

A.2.2 Symbols used on the machine



WARNING: DANGER!

Caution! Observe working instructions.



WARNING: HIGH VOLTAGE!

Caution! Prior to opening, pull out power plug.

A.3 Use of the machine

A.3.1 Correct use

- The AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4 is a sewing machine for the automatic serging of inseams and side seams of trousers panels with or with knee lining.
- The machine can be used for processing all conventional materials for outerwear.
- The machine has been designed for permanent operation in industry.
- The AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4 has been tested for electromagnetic compatibility and is suited for installation in industrial operating rooms.

A.3.2 Incorrect use

- The AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4 must not be operated in rooms that do not comply with the location requirements.
- The AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4 must not be operated in the vicinity if devices or systems that produce strong magnetic fields as otherwise the correct function of the program control may be impaired.

A.4 Safety requirements

A.4.1 Standards and directives

- DIN EN, Part 1:1991-11, Part 2:1995-06
Safety of machines
- DIN EN 60601, Part 1:1994-05
Safety regulations for electrically operated measuring and control installations, general requirements.
- DIN EN 50178 (VDE 0160): 1998-04
Equipment of power systems with electronic devices
- DIN EN 50082 (VDE 0839) Part 2:1997-11
Electromagnetic compatibility, basic specification, immunity to interference.
Part 1: Domestic, business and commerce, small enterprises.
Part 2: Industry.
- DIN EN 60204 (DIN VDE 0113): 1993-06
Electrical equipment of industrial machines

Section B

Operating Instructions

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B.1 Description of the machine

B.1.1 Functional units

The AUTOMATIC MULTI-HEAD SERGING MACHINE 1365-4 consists of six functional units:

- 1** Operating panel
- 2** A machine
- 3** B machine
- 4** Cross transport with sliding panel **5**
- 6** Stacker
- 7** Bonding station

Optionally, the automatic serging machine may be equipped with a third sewing head (**8** C machine) for serging the short seams (waistband seam, hem seam, and fly seam).

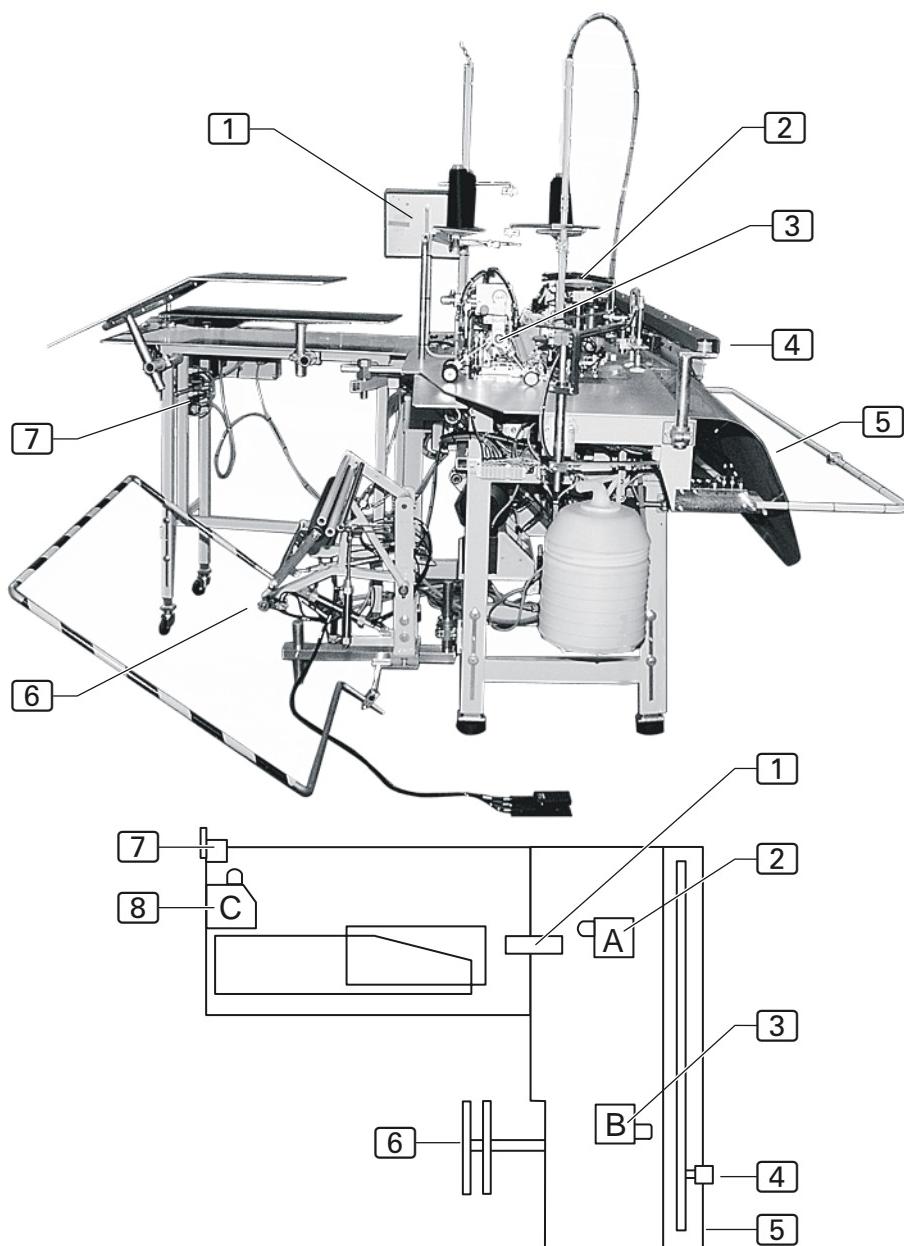


Fig. 1

B.1 Functions of the machine

B.2.1 Operating principle and machine cycle

Operating principle:

The automatic multi-head serging machine 1365-4 allows the automated serging of inseams and side seams of trouser panels, with or without knee lining. The machine can be equipped with up to three sewing heads.

- C machine (optional) for serging the waistband, hem, and fly seam,
- A machine for serging the inseam or side seam. If the machine has only two sewing heads, the A machine can be used for serging the waistband, hem, and fly seam in a separate machine cycle.
- B machine for serging the seam opposite the trouser panel worked with the A machine.

The operating principles of the A machine and of the B machine are identical: During the sewing process, the contour guide controls the routing of the seam along the fabric contour. The sewing unit sews and serges the fabric contour automatically and incorporates the fullness for the knee lining, if required.

Machine cycle, Fig. 2:

The trousers panels are prepared on the two shelves [3]:

- At the bonding station [5], the front trousers panel and the knee lining are secured to each other with a bonding mesh.
- Now, the short seams can be serged at the C machine [4] or at the A machine [6].
- Then, the sewing pieces are lined up at the contour guide of the A machine [6], and the fully automatic sewing process starts.
- The cross transport picks up the sewing pieces at the transport unit of the A machine and transports them to the B machine [2] where the second, opposite seam is serged.
- The transport unit of the B machine transports the sewing piece from the working plate to the stacker [1] where they are stacked on top of each other.
- As soon as the sewing process starts at the A machine, the next trousers panels can be secured at the bonding station.

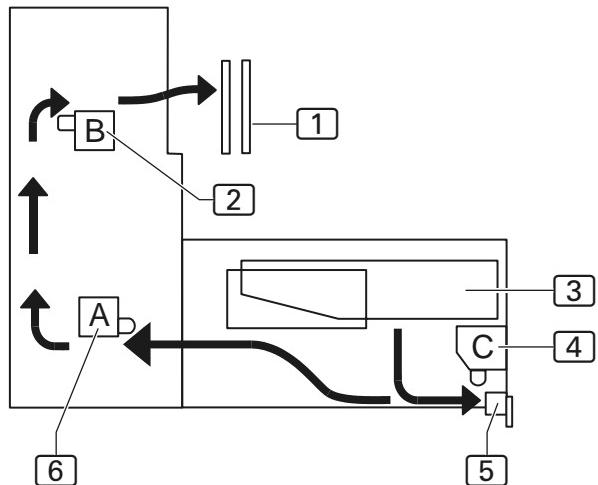


Fig. 2

B.1 Functions of the machine

B.2.2 Securing the sewing pieces

Bonding station, Fig. 3:

To prevent the trousers panel and the knee lining from being shifted during the sewing process, they are secured to each other by hot pressing at a lateral location.

At the bonding station **1**, a bonding mesh strip **3** is placed between knee lining and trousers panel and heated by the lower stamp **4** of the press unit. Then, the upper stamp **3** and the lower stamp **4** press the sewing pieces together so that they are secured to each other.

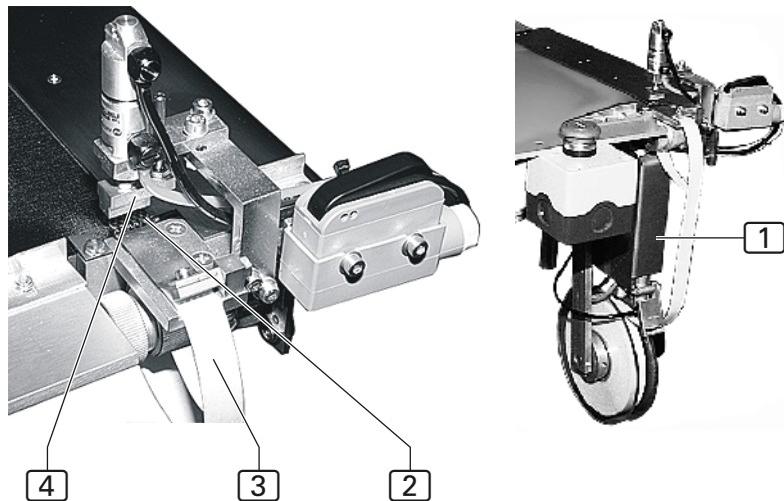


Fig. 3

B.2

Functions of the machine

B.2.3 Guiding of the sewing pieces

The guiding of the sewing pieces along the stop of the A and B machines is controlled by the combined action of contour guide and puller. When sewing with excessive arc contours, the support is activated for rotating the sewing pieces.

Contour guide, Fig. 4:

During the transport of trousers panel and knee lining to the sewing unit, the contour guide controls the shape of the fabric contour and ensures the exact routing of the seam along the sewing unit stop.

At the contour guide, the following settings are made for the thickness of the fabric:

- Height quick adjustment **1** of the contour guide:
Use this control for the rough adjustment of the thickness.
The distance between the contour guide sliding plate **4** and the working plate can be changed in four stages of 0.8 mm each in both directions. Stage 1: smallest distance (0.8 mm), Stage 4: largest distance (3.2 mm)
- Height fine adjustment **2** of the contour guide:

The adjustment made with the height quick adjustment can be fine-adjusted. The following should be observed as a rule:

A single fabric layer should pass easily below the sliding plate **4** while a double layer must not pass through the gap.

- The pressure that the contour roller **6** applies to the sewing pieces is set with the adjustment screw **3**.

The setting of the compressed-air nozzle **5** that blows the sewing pieces against the stop should not be changed to adjust the contour control.

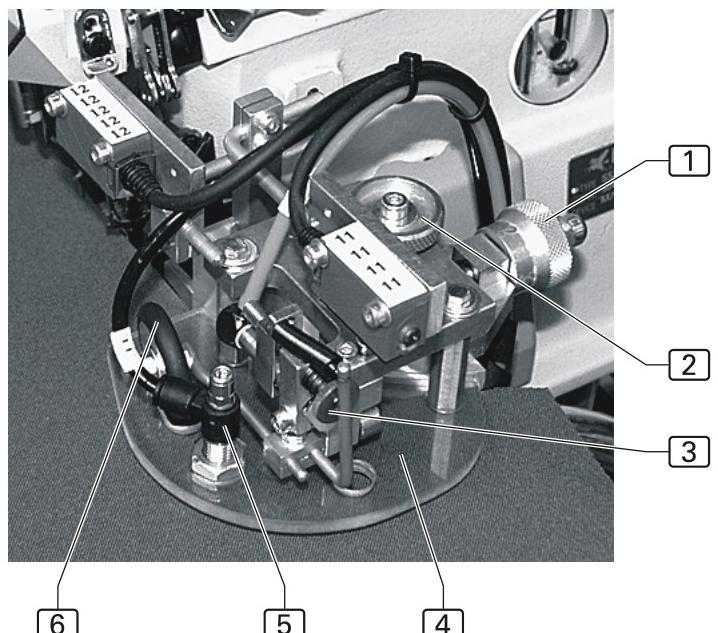


Fig. 4

B.2 Functions of the machine

Control, Fig. 5:

The control of the sewing pieces along the sewing stop [5] is affected by:

- the puller speed [6],
- the pressure that the contour roller [4] applies to the sewing pieces.

The photocell [1] uses the reflective film [2] to determine the deviation of the fabric contour [3] from the ideal routing and readjusts the speed of the puller [6] as required.

- If the sewing pieces are shifted sideways away from the stop, the puller speed is too high,
- if the sewing pieces warp at the stop, the puller speed is too low..

The frequency for adapting the puller speed is set with the program control

In addition, the contour roller [4] pushes the sewing material toward the stop [5] as a result of its orientation. The lateral thrust depends on the pressure that the contour roller applies to the sewing pieces:

- If the sewing pieces are shifted sideways away from the stop, the pressure is too high,
- if the sewing pieces warp at the stop, the pressure is too low.

The required contour roller pressure is determined in sewing tests in combination with the puller speed.

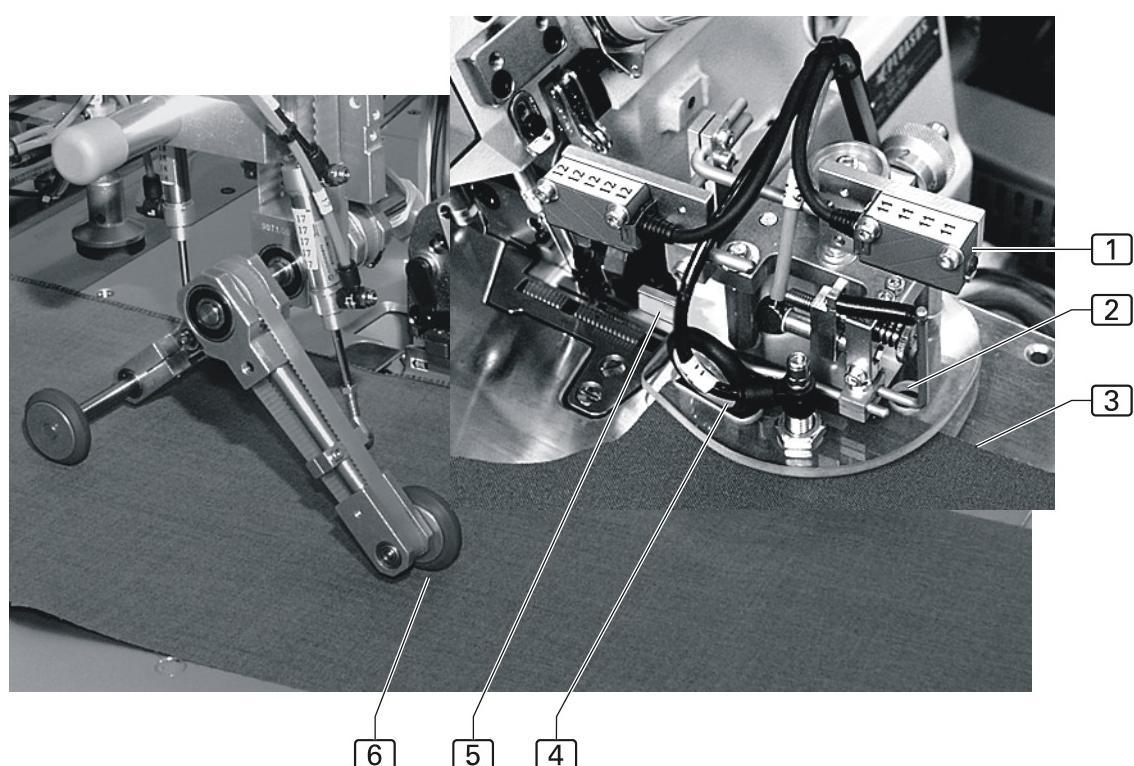


Fig. 5

B.2

Functions of the machine

Support, Fig. 6:

In the sewing range of the waist curve, the position of the support 1 is changed at the B machine to rotate the trousers panel for the sewing process. If the trousers panel inseam is effected at the B machine, the puller also swings out at the pivot 2 to ensure that the trousers panels are positioned correctly at the stacker.

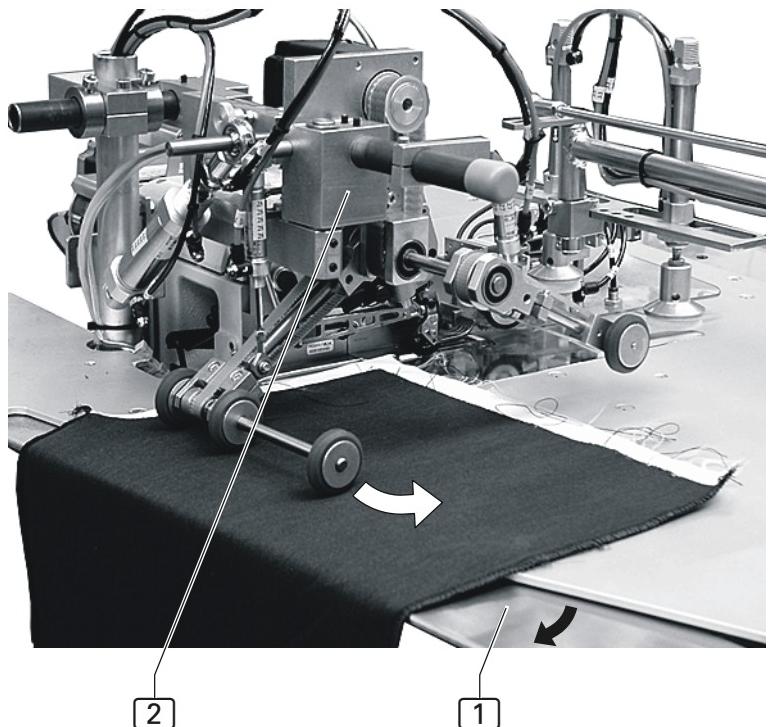


Fig. 6

B.2

Functions of the machine

B.2.4 Serging the seam

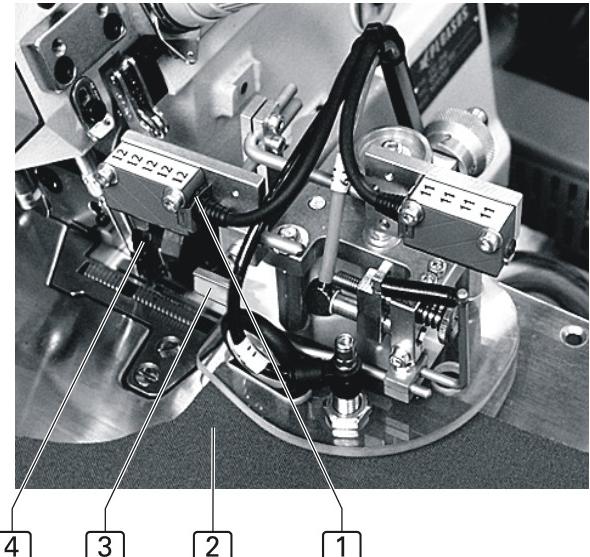
Sewing heads, Fig. 7:

Each sewing head performs the sewing, thread cutting, and serging functions. The sewing units of the A and B machine also incorporate the fullness for the knee lining, as required.

The start of the sewing process is triggered by the photocell 1 when the sewing pieces 2 at the stop 3 of the sewing unit are moved toward its sensor range. As soon as the photocell recognizes the sewing pieces (photocell darkens), the sewing process at the A machine starts:

- the trousers panel is sewn,
- the knife 4 serges the seam,
- the thread rests are aspirated into the waste container.

This sewing process is repeated at the B machine for the opposite seam.



NOTE - Reflective surfaces of the photocells!

Abb. 7

The reflective surfaces of the photocells at the A and B machines must not be damaged or dirty as otherwise the sewing unit control may be impaired.



NOTE - Cancelling the sewing process!

When the program stop switch at the operating panel is depressed, all machine movements and the sewing process are stopped immediately. The switch is locked after it has been depressed and must be unlocked for a reset (machine restart).

B.2

Functions of the machine

B.2.5 Width distribution for knee lining

To ensure the correct width distribution, the transport characteristics of differential transport and top transport must be matched to fit the material of the knee lining. This is required when waved lining is sewn.

Presetting, Fig. 8:

In the sewing range of side seam **A** and inseam **B**, the trousers panel splits into five sections with the knee lining **C** extending over four of these sections. For each section, the length can be varied and the pertaining fullness (quantity) can be preset with the program control (see Section D, Programming Instructions).

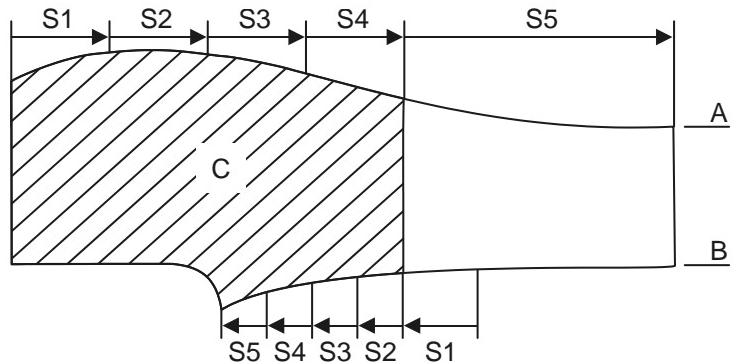


Fig. 8

Quick adjustment, Fig. 9:

The operating panel allows direct access for the quick adjustment of the fullness by modifying top transport **2** and differential transport **1**. Select the corresponding function and modify it in a range between -19 and +19.

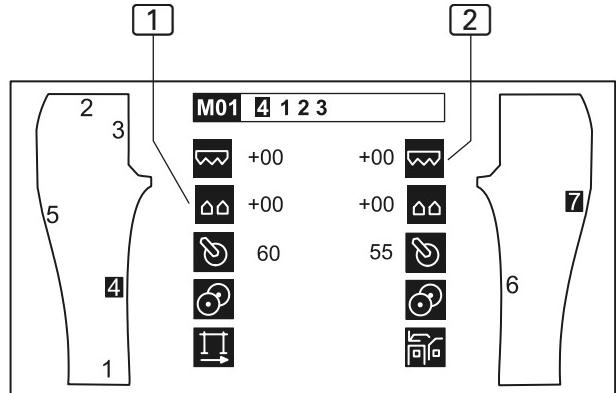


Fig. 9

B.2 Functions of the machine

B.2.6 Transport

Transport unit of A machine, Fig. 10:

The transport unit of the A machine consists of puller [2] and roller [3].

- The puller transports the sewing pieces during the sewing process.
- The roller moves the sewing pieces to the cross transport and also supports the transport function of the puller. This function can be enabled for heavy fabrics.

To improve the gliding characteristics of the trousers panels, the working plate has six compressed-air nozzles [1] near the A machine. The air blows from below against the trousers panels; the resulting air cushion reduces friction during the transport.

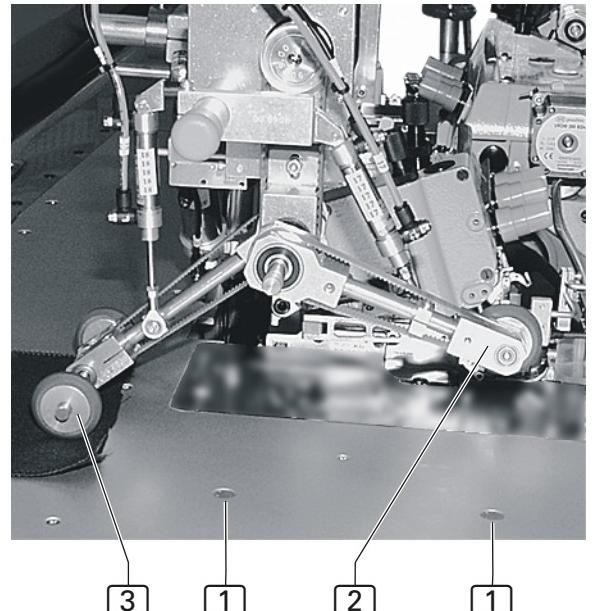


Fig. 10

Cross transport, Fig. 11:

The cross transport, consisting of double stamp [1] and accessory stamp [4], picks up the sewing pieces [3] at the A machine and transports them across the sliding panel [2] to the B machine. If the sewing process at the B machine is not completed, the cross transport stops at a wait position [5] in front of the B machine.

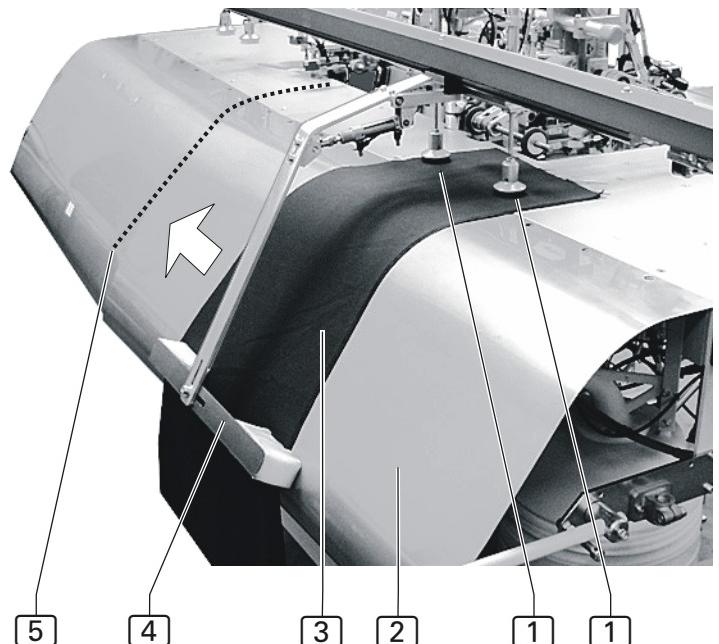


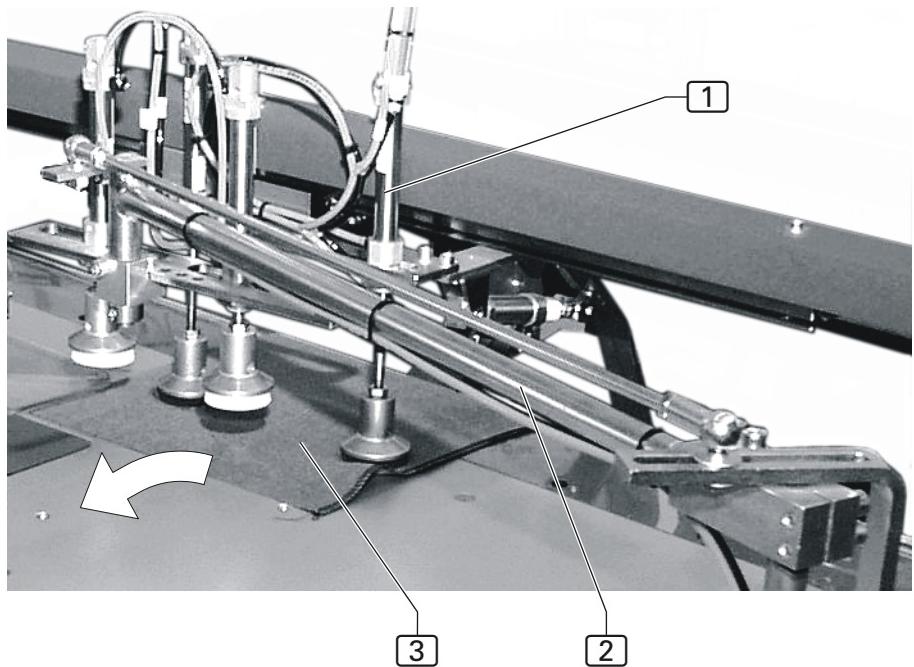
Fig. 11

B.2

Functions of the machine

Swing arm, Fig. 12:

The swing arm **1** receives the sewing pieces **1** from the cross transport **2** and lines them up at the contour guide of the B machine.



Transport unit of the B machine, Fig. 13:

The transport unit of the B machine comprises the puller **1** and a roller **4**.

Fig. 12

- The puller transports the sewing pieces during the sewing process,
- the roller moves the sewing pieces from the worktable to the stacker. To ensure that the trousers panels are stacked flush at the stacker, the roller swings out at the pivot **3** when inseams are sewn.

The working plate has compressed-air nozzles **2** near the B machine. Just like at the A machine, the transport process is supported by a compressed air cushion.

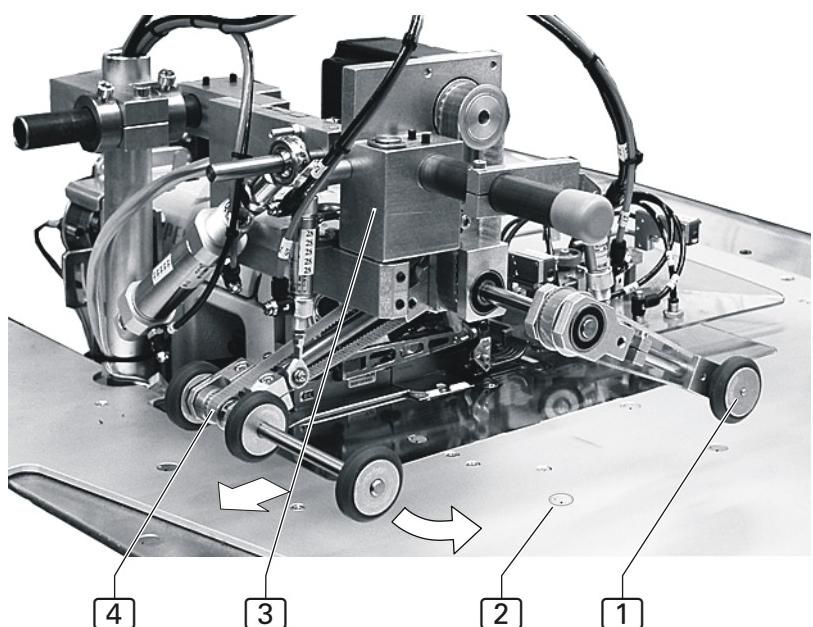


Fig. 13

B.2 Functions of the machine

B.2.7 Stacking

Stacker, Fig. 14:

As soon as the chain is severed, the automatic stacker is activated and deposits the sewing piece over the bundle rod.

To remove the sewing pieces, the footswitch is depressed so that the stacker bundle clamp opens.

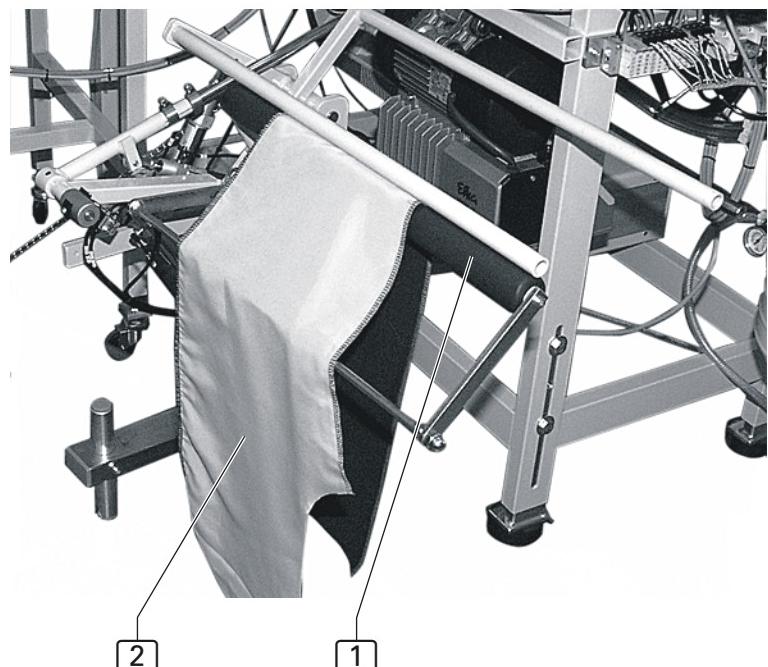


Fig. 14

B.2

Functions of the machine

B.2.8 Switches

Power switch / Emergency stop switch, Fig. 15:

Main switch / Emergency stop switch

The main switch [2] is used to switch the power supply of the machine on or off. In case of extended production intermissions, the machine must be switched off with the main switch so that all functional units are disabled. The main switch is located at the machine frame below the A machine and is also used as an emergency stop switch.

On/off switch for the bonding station heating module
The heating module [1] of the bonding station has a thermostat with a separate on/off switch that is installed below the bonding station.

Program stop switch

When the program stop switch [3] is pressed, all machine movements and the sewing process are interrupted immediately.

The switch is locked after it has been pressed. When rotated clockwise, the switch is unlocked and returns to its original position. The control performs a reset.

 **NOTE - Program stop switch!**

When the program stop switch is actuated, it merely cancels the machine cycle while the program control and the machine drive continue to be supplied with electric voltage. To interrupt the power supply, switch the machine off using the main switch.

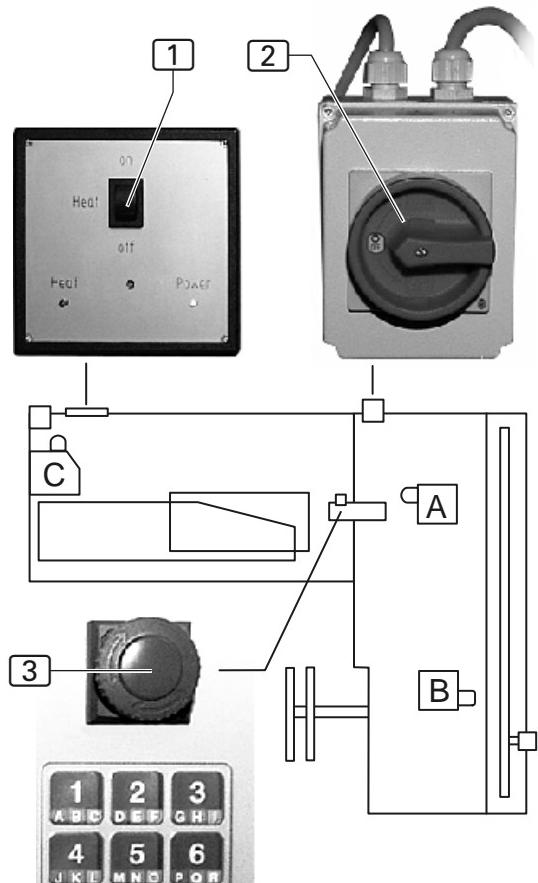


Fig. 15

B.2

Functions of the machine

Function switches, Fig. 16:

Clamp switch **2** for opening/closing the bonding clamp

During normal operation, the bonding clamp is open. The knee lining is pushed below the bonding clamp to be secured to the trousers panel. When the clamp switch is pressed, the bonding clamp closes, and the knee lining is secured for the bonding process.

Bonding switch **1** for activating the bonding stamps

The trousers panel is placed onto the knee lining. When the bonding switch is pressed, the upper and lower stamps of the bonding unit are pressed against each other and the bonding mesh between the stamps bonds the sewing pieces together.

Footswitch for stacker **3**

When this footswitch is pressed, the stacker bundle clamp opens so that the sewing pieces can be removed. When the footswitch is released, the bundle clamp closes again.

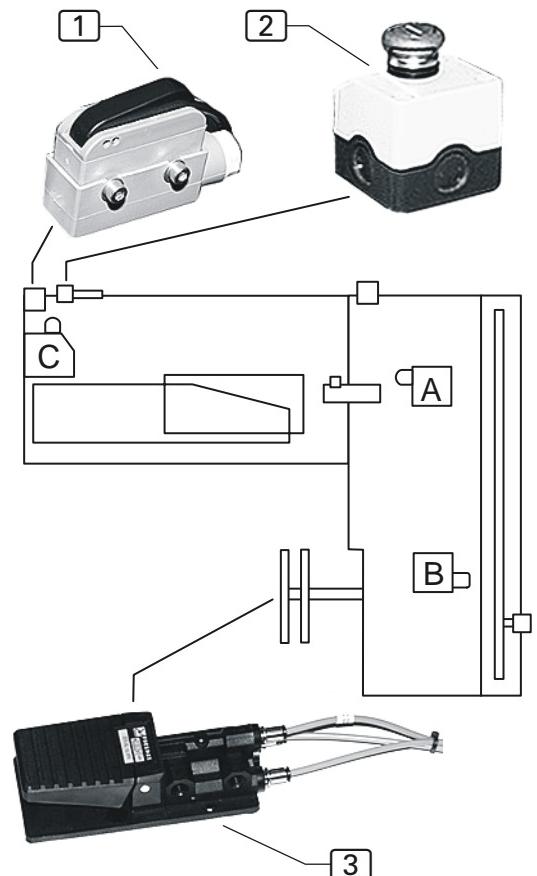


Fig. 16

B.2

Functions of the machine

B.2.9 Operating panel

Fig. 17: The operating panel is the display and data input medium of the machine control. It contains the microprocessor that controls the machine and the storage media (EPROM) for backups of the program control.

Display [1]

The display shows information about the machine control and the sewing program parameters. If a function for a sewing program is enabled or disabled, the symbol for that function and the pertaining parameter value are displayed or disappear.

Slot [2] for memory card

The memory card is the storage medium for backups of any machine control data. Sewing programs can be copied to the memory card and retrieved back into the machine control, if required.

Program stop switch [3]

This switch is used for cancelling the machine cycle.

Numeric keypad [4]

Use the numeric keypad to enter all modifiable numeric values. The sewing programs M01-M09 are activated by entering the corresponding numbers. To activate the sewing programs M10-M20, press the M key, then enter the corresponding numbers. Use the P key to select submenus, to confirm data input or to exit the programming mode.

Arrow keys [5]

Each pressing of the UP or DOWN arrow key will move the cursor one line up or down in the selected menu.

Use the LEFT or RIGHT arrow key to mark the desired parameter in the selected menu or to scroll through the selected menu if the parameter list consists of several pages.

Function keys [6]

Use the function keys to select the program control menus.

Symbol bar [7]

The symbol bar indicates the menus that can be selected directly from the start level by using the function keys.

All other menus for setting machine or program functions can be selected from the various program levels. The display of the operating panel shows the pertaining menu symbols.

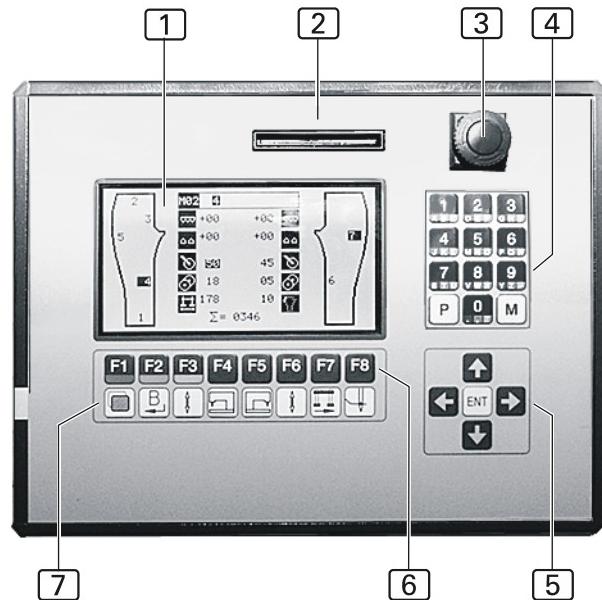


Fig. 17

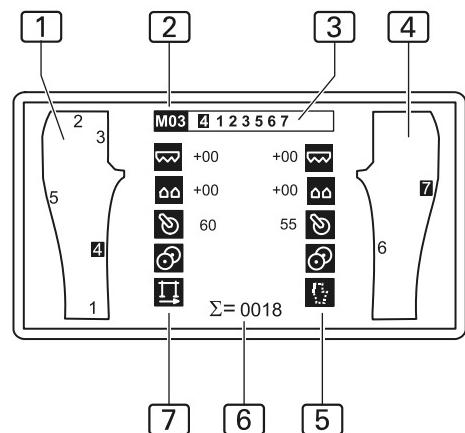
B.2 Functions of the machine

B.2.10 Sewing programs

The program control memory can store up to 20 sewing programs (**M 01-M 20**). Up to 7 seams with corresponding seam numbers **[3]** can be assigned to each sewing program **[2]**. The seams differ by their control parameters that are assigned to them by their sewing program and by the control functions that are enabled.

Fig. 18: The display shows the structure of the selected sewing program:

- [1]** Seams of the A machine
- [4]** Seams of the B machine
- [2]** Description of the sewing program
(a sewing program may consist of several seams)
- [3]** Seam number of the sewing program
- [5]** Symbols of the activated sewing functions of the B machine
- [6]** Day counter for completed seams
- [7]** Symbols of the activated sewing functions of the A machine



The structure is explained with the example of sewing program **M 03** (trousers front panel with knee lining) that can effect the short seams as well as inseams and side seams in alternation.

- The A machine can effect the short seams 1, 2, and 3 manually:
 - 1 hem seam
 - 2 waistband seam
 - 3 fly seam
- The inseams and the side seams are serged automatically:
 - 4 inseam
 - 5 side seam
- The B machine effects the corresponding opposite seams:
 - 6 inseam
 - 7 side seam

Fig. 18

If the A machine effects inseam 4 of the right front trousers panel, the B machine serges the opposite side seam 7; if the A machine effects side seam 5 of the left front trousers panel, the B machine serges the opposite inseam 6.

The enabled control functions are displayed as symbols **[7]** and **[5]** for the A and B machines. If the control function of a sewing program is disabled, the pertaining symbol appears as a pictogram on a bright background. The control parameters of the functions can be modified by entering values.

B.2

Functions of the machine

A sewing program can be combined with one seam or with several seams. If a sewing program with several seams is selected, the seams are effected from left to right in the sequence of their seam numbers. The sequence of the seam numbers can be changed.

Factory settings

The program control has three factory-installed sewing programs.

- **M 0 - M 03 for standard fabric materials.**
- **M 09 sewing program for manual finishing.**
- **M 07 - M 08: These memory locations are unassigned.**
- **M 10 - M 20: Use these memory locations for modified or freely programmable sewing programs.**

The symbols for the sewing programs indicate the sections of the seam for which fullness has been programmed.



M 01 normal rear panel



M 02 rear panel with excessive waist curve



M 03 front panel with knee lining

B.3 Operation

B.3.1 Preparing the machine

Prior to a production start, check the supply connections, connect the machine to the compressed air system and to the power supply system, and prepare the sewing head.

1. Connect the machine to the power supply system.

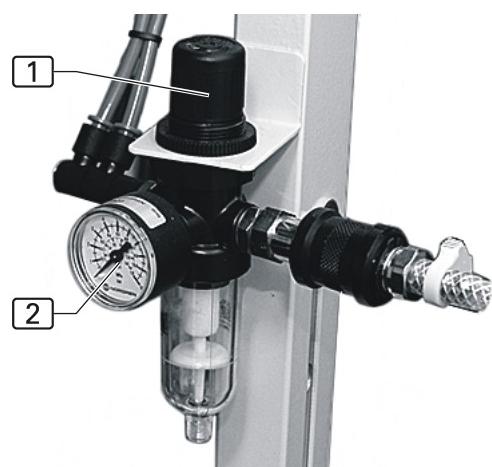


WARNING - Electric shock!

Contact with current-carrying components may cause a lethal electric shock. Check plug and cable before connecting machine to power supply system.

- Do not use damaged plugs, sockets or cables to connect the machine to the power supply system!
- The machine is operated with a supply voltage of 230 V $\pm 10\%$ at 50/60 Hz. The power supply cable must have a minimal cross section of 1,5 mm.
- Before connecting the machine to the power supply system, check to see if the ratings of the power supply system in the operating room correspond with the ratings on the nameplate at the rear of the machine.
- If the ratings for voltage (V) and maximum current (A) do not match, the machine must not be connected.
- Insert the grounding plug into a properly grounded and fused power socket.
- Make sure that the power supply cable is not subjected to tensile or pressure forces.

2. Switch the machine on by moving the main switch to position I. After the machine has been switched on, its control program is powered up. The display shows the most recently selected sewing program.
3. Switch the heating module on. Wait until the red indicator goes out to indicate that the lower stamp has reached its operating temperature.
4. **Fig. 19:** Connect the machine to the compressed air supply system by installing the compressed air hose connector to the outlet of the compressed air supply system in the operating room. A pressure reducer 1 reduces the compressed air to the operating pressure of 6 bar. Check the manometer 2 to see if the correct operating pressure has been set. The pressure reducer is located at the machine frame below the B machine.
5. Insert needle, pass top thread through needle and install bottom thread spool to sewing head (see operating instructions of sewing head manufacturer or supplier).



NOTE - Passing thread through needle!

On both machines, the program control supports the passing of the thread through the needle.

Fig. 19

B.3 Operation

B.3.2 Selecting a sewing program

NOTE - Operating functions!

The following pages describe only the major functions of the operating functions that are required for the immediate production run.

For a detailed description of the program control and for details about program control settings and programming of sewing programs, please refer to Section D, Programming Instructions, of these working instructions.

1. Select the sewing program at the operating panel.

The sewing programs M01-M09 can be selected in direct access:

Enter the number of the sewing program at the numeric keypad , e.g.

5.

The sewing programs M10-M20 are selected from the memory:

Select the memory function:

- Press the  key

Select the number of the sewing program, e.g. 15:

- Press the  and  keys

2. Activate the seam number of a selected seam in direct access.

Move the cursor to the seam number:

- Press the  or  key

Fig. 20: Display of the seam number:

- | | |
|---|---------------------|
|  | Active seam number |
|  | Passive seam number |

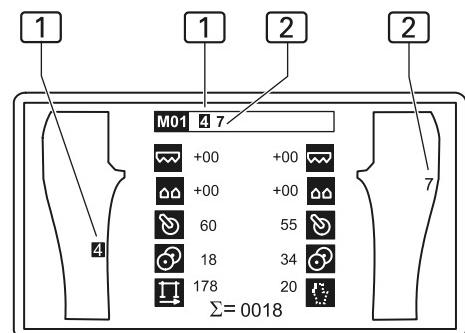


Fig. 20

B.3 Operation

B.3.3 Passing thread through needles

This function allows the easy passing of thread through the needles on both sewing heads. The photocells are switched off so that the sewing units are disabled. The pressure foot is lowered, the transport units are raised.

1. Prepare the sewing unit for the passing of the thread:

- Press the **F8** key



2. Pass the thread through needle and hook.

3. Enable the sewing unit:

- Press the **F8** key

B.3.4 Modifying sewing program functions

For A machines and B machines, the value range of the following functions of a sewing program can either be modified or completely enabled or disabled as executable machine function:

	Top transport	In addition to basic setting
	Differential transport	In addition to basic setting
	Puller	Parameter 14, speed
	Roller	Parameter 30, transport distance
	Cross transport	Parameter 39, transport distance
	Sewing speed	Basic value, speed

Fig. 21: Enabled functions **[1]** are displayed as inverted symbols. A disabled function **[3]** appears as a pictogram on a bright background. The parameter value assigned to a function is displayed in the corresponding input field **[2]** to the right or to the left of the function symbol.

The parameters assigned to the functions are either the additional increase or the reduction of basic values or the direct modification of the main parameters of a seam.

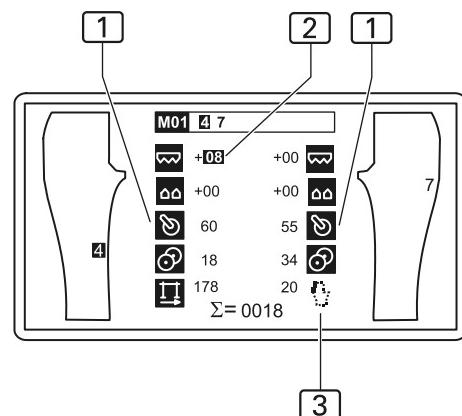


Fig. 21

B.3 Operation

■ Changing values

1. Select the function at the A machine or B machine:

- Press the **F3** or **F6** key



until the symbol assigned to the input field appears on a black background.

2. Increase or reduce the value using the arrow keys:

- Press the **◀** or **▶** key

3. Confirm input:

- Press the **P** key



Top transport

Within a sewing program, the width distribution can be corrected by quick adjustment of the top transport both at the A machine and at the B machine. To achieve this, the position of the top transport unit to the main transport unit can be changed within a value range of -19 to +19. This setting affects only that section of the seam for which fullness has been enabled.



Differential transport

The position of the differential transport unit to the main transport unit of the sewing unit can also be changed by quick adjustment within a value range of -19 to +19. This setting affects only that section of the seam for which fullness has been enabled.



Puller speed

The photocell determines the deviation of the fabric contour from the ideal routing and readjusts the puller speed, as required.

- If the sewing pieces are shifted sideways away from the stop, the puller speed is too high,
- if the sewing pieces warp at the stop, the puller speed is too low.

The frequency for adapting the puller speed is set with the program control.

The basic speed of the puller can be changed by using the input field.



Roller

The parameter changes the length of the distance along which the roller transports the sewing piece from the A machine to the point where the cross transport picks it up or at the B machine from the worktable to the stacker.

B.3 Operation



Cross transport

This value is used for setting the actual transport distance from the A machine to the B machine or the distance along which the cross transport moves the sewing piece from the wait position in front of the B machine to the point where the swing arm picks it up.



Sewing speed at waist curve

The parameter changes the basic value of the puller speed when the waist curve is sewn. Depending on the waist curvature, a puller speed that has been adapted accordingly can be set.

■ Enabling or disabling functions

For specific sewing patterns or as the result of a specific material behavior, all six functions can be enabled or disabled individually or in combinations.

1. Select the function at the A machine or B machine:

- Press the **F3** or **F6** key


until the symbol assigned to the input field appears on a black background.

2. Move to the basic parameter menu of the selected function:

- Press the **ENT** key

3. Enable or disable the function:

- Press the **F8** key

4. Confirm input:

- Press the **P** key

Fig. 22: At the B machine **1** where the inseam **2** is effected, press the F8 key **4** to enable the puller **3** function. When this program function is selected, the parameter list assigned to this specific sewing function **5** is opened. For details about the programming of sewing programs, please refer to Section D, Programming Instructions, of these working instructions.

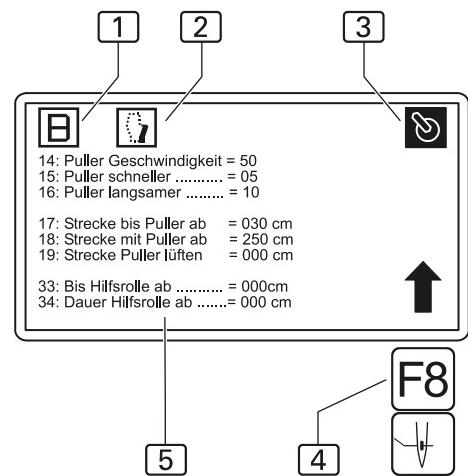


Fig. 22

B.3 Operation

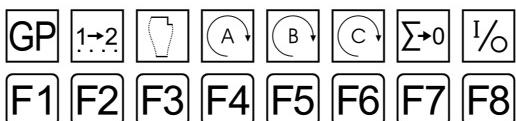
B.3.5 Resetting the day counter to zero

This function is used to reset the day counter to zero before a new production cycle or after a completed cycle.

1. Move to access level 2:

- Press the **F1** key


The display shows the symbols of the selectable functions on this level.



2. Select the function for resetting the day counter:

- Keep the **F7** key depressed for approx 3 seconds


The day counter is reset to zero.

3. Confirm reset and return to access level 1:

- Press the **P** key.

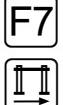

Display: $\Sigma = 0000$

B.3.6 Moving the cross transport manually

Use this function for the manual transport of a sewing piece from the A machine to the B machine. When the key is pressed, the two cross transport stamps are lowered, and the transport moves to the pick-up position at the B machine; from there, the remaining part of the machine cycle is triggered automatically and continued.

1. Position the sewing piece below the two stamps.

2. Start the cross transport manually:

- Press the **F7** key


The cross transport moves to the wait position in front of the B machine.

3. The automatic machine cycle continues.

B.3 Operation

B.3.7 Resuming the sewing process at the B machine

After the sewing process at the B machine has been interrupted, it can be resumed by lining up the sewing piece at the contour guide photocell. This manual interference in the machine cycle may be necessary e.g. if a failure occurs in the cross transport.

1. Stop the sewing process of the B machine:

- Press the  key


2. Resume the sewing process of the B machine:

The automatic sewing process is resumed when the sewing piece is lined up manually at the photocell of the B machine.

B.3 Operation

B.3.8 Securing the sewing pieces

The trousers panels are prepared at the upper shelf, the knee lining is prepared at the lower shelf.

Bonding the trousers panels:

1. Make sure that the bonding station heating module has reached its operating temperature; the red indicator **[6]** must be off.
1. **Fig. 23:** Line up knee lining **[1]** below the bonding clamp **[2]**.
2. Press clamp switch **[3]**; the clamp lowers and secures the knee lining. Simultaneously, a fixed section of the bonding mesh **[5]** is advanced and removed from the backing tape at the separator.
3. Place trousers panel onto lining and align properly. To change the position of the knee lining, press the clamp switch to open the bonding clamp.
4. If the sewing pieces are aligned properly on top of each other, press the bonding switch **[4]**. The upper stamp is lowered, presses knee lining, bonding mesh, and trousers panel against the heated lower stamp and is then raised.
5. The bonding clamp opens.
6. The trousers panels are now securely attached to each other and can be lined up for the serging process at the A machine.

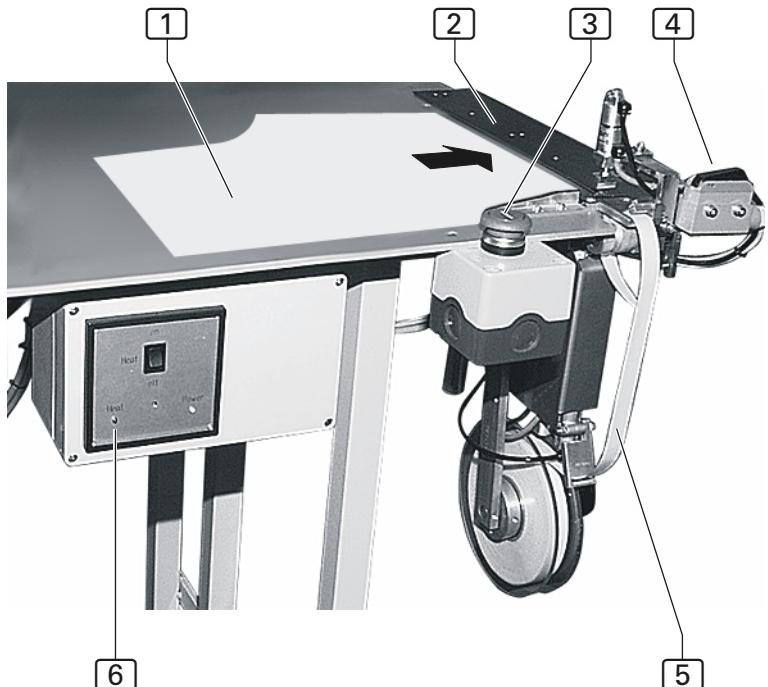


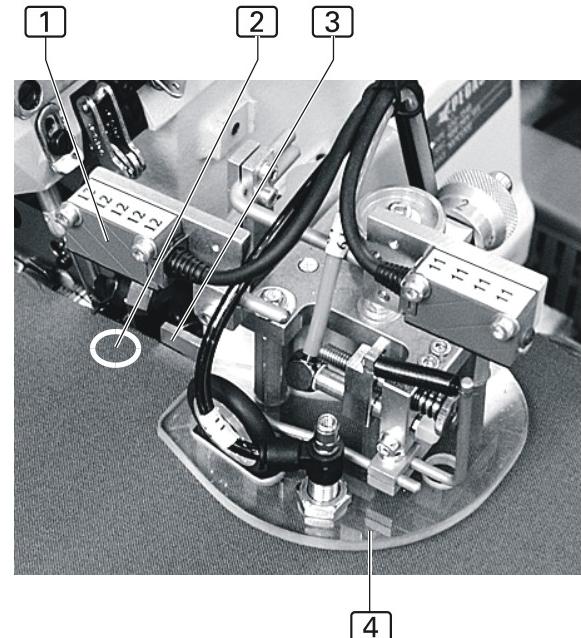
Fig. 23

B.3 Operation

B.3.9 Sewing process

Starting the automatic machine cycle:

1. Select the seam at the operating panel.
 - Example: If a right front trousers panel is to be sewn, the A machine effects the inseam and the B machine effects the side seam,
 - if the left front trousers panel is sewn first, the A machine effects the side seam and the B machine effects the inseam.
2. **Fig. 24:** In any case, always align the waistband side of the trousers panels at the A machine. Slide trousers panels to just before the stop **[3]** below the sliding panel **[4]** of the contour guide and smoothen.
3. Then, slide the trousers panels into the sensor range **[2]** of the photocell **[1]**. When the fabric interrupts the light beam at the reflective surface, the automatic machine cycle is started automatically. The seam is sewn and serged at the A machine.



NOTE - Starting the sewing process!

Fig. 24

To ensure the correct routing of the seam, the trousers panels must be released as soon as the transport unit of the sewing head has seized the sewing pieces.



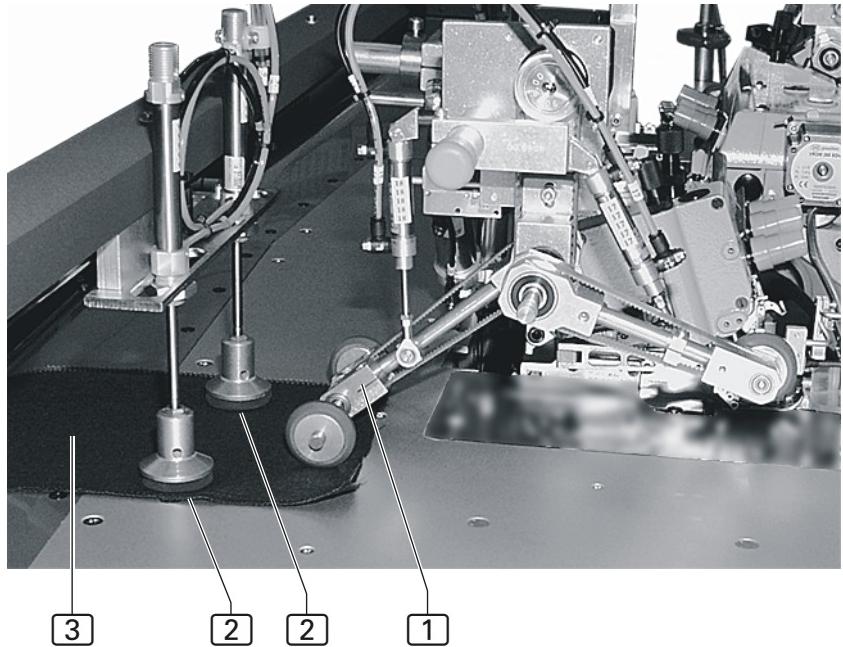
NOTE - Resetting the insertion process!

Before the response delay period of the photocell has elapsed, the insertion process can be cancelled by moving the trousers panels out of the sensor range of the photocell.

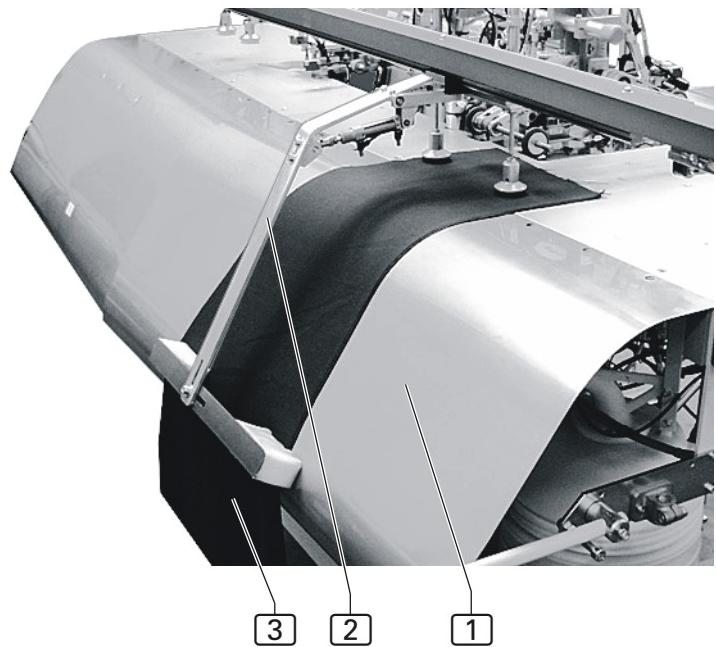
After the sewing process has started, the machine cycle can only be cancelled by pressing the program stop switch or by pressing the function key F1.

B.3 Operation

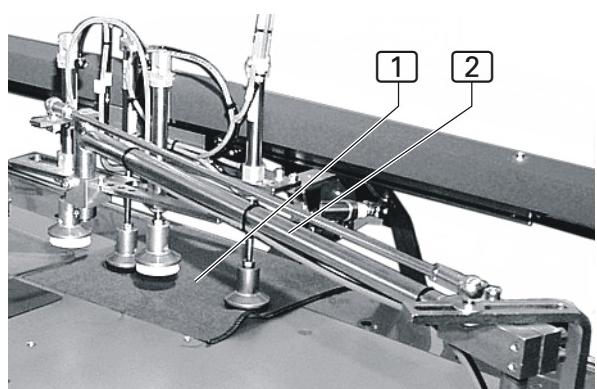
4. **Fig. 25:** The two stamps **2** of the cross transport receive the sewing pieces **3** from the roller **1** of the A machine's transport unit.



5. **Fig. 26:** The sewing pieces **3** are then moved over the sliding panel **1** to the B machine. If the B machine is still busy, the cross transport **2** stops in a wait position in front of the B machine.

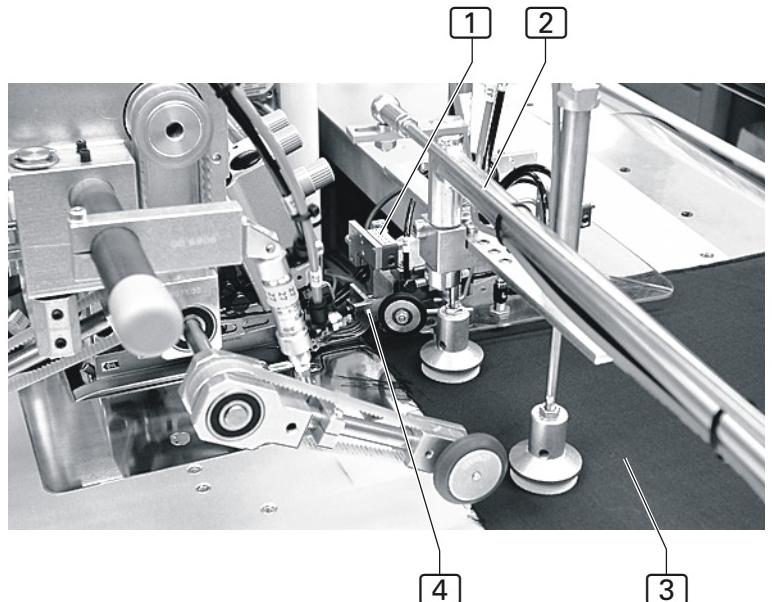


6. **Fig. 27:** The swing arm **2** moves the trousers panels **1** to the contour guide of the B machine.

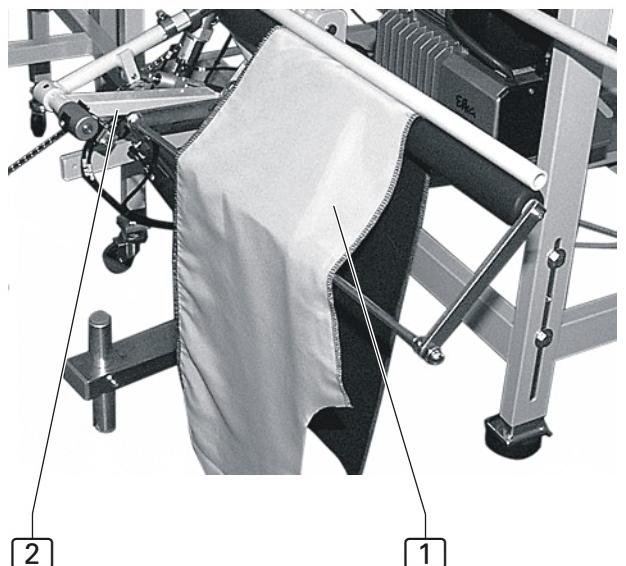


B.3 Operation

7. **Fig. 28:** The swing arm **2** lines the sewing pieces **3** up at the stop **4** in the sensor range of the photocell **1**; this starts the sewing process at the B machine. The seam is sewn and serged automatically.



8. **Fig. 29:** The trousers panels **1** are then moved across the worktable to the stacker unit **2** where they are stacked on top of each other.



8. **Fig. 30:** Due to its overlapping mode layout, the automatic serging machine is very efficient: Up to four trousers panels can be integrated in one machine cycle.
- Sewing pieces **1** on the shelf.
 - At the B machine, a trousers panel **5** is sewn.
 - The trousers panel **4** is at the wait position at the B machine.
 - Panel **3** is received by the cross transport.
 - Panel **2** is lined up at the B machine.



B.3 Operation

B.3.10 Stopping a sewing program

You can use the program stop switch of the operating panel to stop the machine cycle.

- Fig. 30:** Press the program stop switch **[1]**.
All machine movements and the sewing process are stopped immediately. The switch is locked after it has been pressed.
- To restart the machine after a program stop, all functions must be reset and the machine cycle must be reset to zero position. This is done by unlocking the program stop switch.
Rotate the switch clockwise until it is locked and returns to its original position.
The control program performs a restart.



Fig. 30

B.3.11 Moving the machine to zero position

Prior to a production start, after machine tests or after sewing program modifications, the machine must be reset to its zero position before a machine cycle can be started:

- Press the program stop switch.
- Unlock the program stop switch.

B.3.12 Shutting the machine down

For extended work intermissions, the machine must be shut down completely.

- Switch off power supply by moving the main switch to the **0** position.
- Disconnect the machine from the compressed air supply.

B.3.13 Cleaning the machine

The machine must be cleaned after large production series or at least once a day, whichever occurs first.



CAUTION - Danger of injuries!

If the machine is put in motion accidentally, persons in its direct vicinity may be caught by moving parts which may cause injuries.

Prior to any cleaning work, disconnect the machine from the power supply!

- Turn the machine off using the main switch.
- Remove the power plug from the socket and protect it from accidental reconnection.

- Remove fabric residues.
- Blow off dust and thread residues from sewing head, working plate, main clamp, and linear rail using compressed air.
- Empty waste container: Unscrew container **[2]** from head **[1]** by rotating container clockwise.
- Screw container counterclockwise onto container head.



Fig. 31

Section C

Service Instructions

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C.1 Delivery of the machine

C.1.1 Packaging

The machine is delivered in a solid packaging box on a pallet. All packaging materials can be separated and reused.

- Pallet made of pine wood
- Packaging box made of plywood / transport carton
- Polyethylene film (PE))

NOTE - Shipping braces!

During shipping, moving machine parts are protected with shipping braces (cable ties). The positions of all parts fitted with shipping braces are marked with red labels.

After the machine has been installed and aligned, the shipping braces must be removed.

NOTE - Damages in transit!

If any damage presumably caused by incorrect transport is found when the machine is unpacked, please contact your supplier immediately.

C.1.2 Standard equipment

The machine is delivered in an operative condition. The standard equipment includes:

Automatic multi-head serging machine

- The machine is equipped with several customer-specific accessories. For checking the exact layout, the information on the delivery note is authoritative.
- Service kit with machine oil.

Operating panel and program control:

- Preinstalled (ready-for-use) operating panel.
- Memory card with factory-programmed standard sewing programs.

Technical documents:

- Operating instructions.
- Service instructions.
- Programming instructions.

C.2

Location requirements

C.2.1 Floor quality

The floor of the room where the machine is to be installed must have a sufficient surface strength. The location of the machine must be free of vibrations.

If several machines are to be installed in one room, the static load bearing capacity of the ceiling must be considered.

Weight:

- Machine with accessories approx 200 kg

C.2.2 Interior climate

Climatic requirements for the operating room:

The machine must only be stored or operated in closed operating rooms.

- Room temperature +10° C to +45° C
- Relative humidity 80 % max.

C.2.3 Floor space requirements

For operation during production and for service works, the machine must be freely accessible from all sides. On all sides, there must be a minimum clearance of 1 m.

Dimensions:

- L x W x H 2300 x 2200 x 1700 mm

 **NOTE - Electromagnetic interference!**

The machine must not be installed in the immediate vicinity of devices or electrical components (e.g. transformers) generating a strong magnetic field as otherwise the correct function of the program control may be impaired.

C.2

Location requirements

C.2.4 Supply connections

The machine requires on-site power supply cables with a minimal cross-section of 1.5 mm and a connection to a compressed-air supply system.

Power connection:

The power supply of the machine requires a properly grounded power connection with:

- | | |
|------------------|------------------------|
| • Grounding plug | 230 V ± 10 %, 50/60 Hz |
| • Fusing | 16 A |



NOTE - Peak voltages!

The correct function of the machine requires that the power system supplies a constant current. Peak voltages may particularly impair the stability of the program control.

Compressed-air supply:

The on-site compressed-air supply system must meet the following requirements:

- | | |
|------------------------------|----------|
| • Operating pressure | 6 bar |
| • Compressed-air quality | oil-free |
| • Compressed-air consumption | 40 NL/AT |

C.3 Start-up

C.3.1 Aligning the machine table

After the machine has been installed at the desired location, the machine table must be aligned:

- Set machine table to required height.
- Level machine table horizontally on all sides.

Setting the table height:

1. **Fig. 1:** Lift machine: Connect lifting device at lift points (arrows) below the crossmembers. If the machine is equipped with the optional transport rollers, release brakes before lifting
2. Loosen locating screws [2] on all table legs.
3. Pull table legs [4] out to the desired length and retighten locating screws.
4. Tighten the height adjustment locating screws [2].
5. Lower machine onto floor.
6. Level worktable horizontally in all directions.
7. Tighten the height adjustment locating screws [2].



NOTE - Shipping braces!

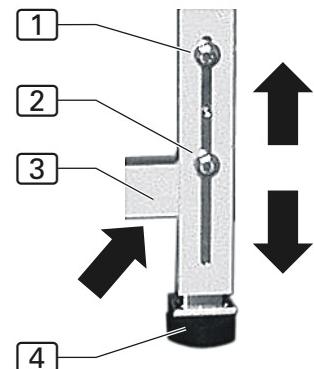


Fig. 1

Before the machine is connected to the power supply system and operated, all shipping braces must be removed.

- Cut off cable ties.
- Remove labels.
- Remove protective film from operating panel.

C.3.2 Compressed-air connections

Fig. 2: The compressed-air connection is preinstalled on the machine. It comprises the following components:

- Pressure reducer [2] with manometer [4] and water separator [4],
- Pressure hose with push-in plug [3].

The pressure reducer is installed to the machine frame below the B machine.

Connecting the machine to the compressed-air supply system:

1. Connect pressure hose plug to on-site terminal unit.
2. Open on-site compressed-air supply.
3. Set pressure reducer to a machine operating pressure of 6 bar by rotating pressure reducer knob [1] and read value on manometer [4]:
 - To increase pressure, rotate in the clockwise direction.
 - To reduce pressure, rotate in the counterclockwise direction.

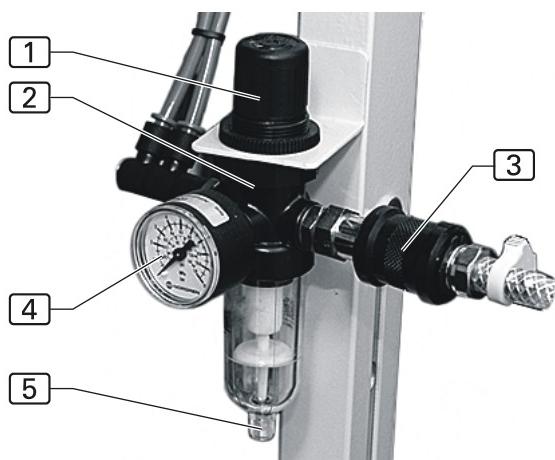


Fig. 2

C.3 Start-up

C.3.4 Power supply

The machine is connected to a power supply system of $230\text{ V} \pm 10\%$ at $50/60\text{ Hz}$.



WARNING - Electric shock!

Contact with current-carrying components may cause a lethal electric shock. Check plug and cable before connecting machine to power supply system.

- Do not use damaged plugs, sockets or cables to connect the machine to the power supply system!
- Before connecting the machine to the power supply system, check to see if the ratings of the power supply system in the operating room correspond with the ratings on the nameplate at the rear of the machine.
- If the ratings for voltage (V) and maximum current (A) do not match, the machine must not be connected.
- Insert the grounding plug into a properly grounded and fused power socket.
- Make sure that the power supply cable is not subjected to tensile or pressure forces.
- Route the power supply cable in a way that ensures free access to and around the machine.



NOTE - Works to the electrical system!

Works to the electrical system of the machine must only be carried out by qualified and authorized expert personnel. Tampering with the machine without authorization will make the warranty void.

C.3 Start-up

C.3.5 Safety check

Before the machine is released for operation, all safety devices must be checked for their correct operation.



CAUTION - Danger of injuries!

The safety devices protect the operating and service personnel while are working on or with the machine.

If the safety devices are fully or partially inoperative, the machine must not be started up.

Perform safety check:

1. Check to see if the protective strap around cross transport and staker has been shifted down to the secured position.
3. The main switch also serves as an emergency off switch. To check the function of this switch, turn the machine on, start a machine cycle and turn the machine off during the sewing process using the main switch. All operational movements of the cross transport and of the assist transport as well as the sewing process must stop, and the program control must switch off.
4. Check the function of the program stop switch by starting a machine cycle and pressing the switch. The machine operation must be interrupted.
5. Unlock the program stop key. The program control initiates a reset, the cross transport must move to its basic position, and the stacker mechanisms must be in its basic position.

C.4 Operation and shut-down

C.4.1 Working with the machine

Factory settings

The program control of the machine has been programmed with 12 standard sewing programs at the factory:

- Sewing programs **M 01** to **M 03** for the automated serging of rear trousers panels and front trousers panels with or without knee lining made of standard materials.
- The sewing programs **M 10** to **M 20** are freely programmable.

These sewing programs are so powerful that they can be used for serging nearly all common trousers shapes.

They are furthermore perfectly suited for training operating personnel and can be used as a template for programming customer-specific sewing programs.

For details about the programming of sewing programs, please refer to Section D, Programming Instructions.

C.4.2 Shutting the machine down

If the machine is to be shut down, it must be disconnected from all energy supply sources.

Disconnecting the machine from the power supply system:

1. Turn the machine off by moving the main switch to position "0".
2. Remove the power plug from the socket and protect it against accidental reconnection.

Disconnecting the machine from the compressed-air supply system:

1. Shut off the on-site compressed-air supply system.
2. Remove the compressed-air hose plug from the terminal unit.



NOTE - Dust-proof protection!

If the machine is to be shut down for an extended period of time, it should be covered with a plastic tarpaulin.

C.5 Maintenance



Warning - Electric shock!

Contact with current-carrying components may cause a lethal electric shock

If the machine is put in motion accidentally, persons in its direct vicinity may be caught by moving parts which may cause injuries.

Prior to any service, cleaning or maintenance works, disconnect the machine from the power supply system!

- Turn the machine off using the main switch.
- Remove power plug from socket and protect it against accidental reconnection.
- If the power supply is not required for repair or set-up work, the machine must be disconnected from the power supply system.

C.5.1 Inspection

The machine must be inspected annually. The inspection comprises particularly the following items:

- safety devices of the machine,
- operativeness of the program control,
- correct function of inputs and outputs.

C.5.2 Cleaning

The machine must be cleaned after large production series or at least once a day, whichever occurs first.

Cleaning the machine surfaces:

1. Disconnect machine from power supply system.
2. Remove fabric residues.
3. Blow off dust and thread residues thoroughly from the sewing head, from the working plate, from the clamp, and from the linear rail using compressed air.
4. Wipe machine components dry using a dry, clean cloth.



NOTE - Plastic surfaces!

Some parts of the machine surfaces are made of plastic materials. Solvents can dissolve plastics and make them unusable.

Do not clean the machine surfaces (particularly the operating panel) with cleaning agents that contain solvent.

C.5 Maintenance

C.5.3 Service

The following service works must be carried out in the specified intervals.

Checking the sewing head oil level (daily):

1. The oil level is checked at the sewing head sight glass. The level must be between the marks for the upper and lower limits. If the level drops below the mark for the minimal level, refill oil.
2. For details on the recommended oil type and refilling procedure, please refer to the operating instructions of the sewing heads that are attached to this machine.

Fig. 3: Emptying the water separator (weekly):

1. Have a suitable container available.
2. Drain water at pressure reducer water separator. Press button 1 at pressure reducer collector and keep it depressed until all the water has been drained.

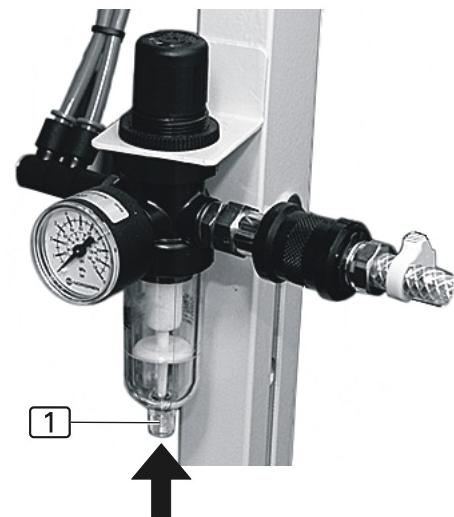


Fig. 3

C.5 Maintenance



NOTE - Repairs!

Any repairs to the machine must only be carried out by an authorized Technical Service or by personnel that has been instructed about the setting up and maintenance of the machine on the occasion of a training by the supplier or manufacturer of the machine.



NOTE - Liability!

Use only original spare parts for installing or replacing machine components.

The manufacturer and supplier will not assume liability for spare parts from third-party suppliers.

C.5.4 Removing/installing the operating panel

1. Disconnect machine from power supply.
2. Remove two locating screws and disconnect interface connector.
3. Remove retaining screws from operating panel bracket.
4. Remove operating panel, install new panel and secure using screws.
5. Connect interface connector to RS 232 interface and secure using two locating screws.

C.5 Maintenance

C.5.5 Transport unit toothed belts

The transport unit at the A and B machines consists of three components that are each driven by a toothed belt:

- Stepper motor,
- puller (fabric transport),
- roller (assist transport)

Replacing the stepper motor toothed belt:

1. Lower the transport unit manually onto the working plate as described in Section D, Programming Instructions.
2. Switch the machine off.
3. **Fig. 4:** Slacken the toothed belt **[1]** by removing the locating screw **[3]** of the stepper motor mounting plate.
4. Lift the toothed belt out of the stepper motor drive roller **[2]** and above the transport roller **[6]**; for this, the pneumatic cylinder rod **[4]** must be removed from the lower suspension **[5]**.
5. To install, route the toothed belt over the fabric transport linkage; position it on the shaft drive roller, then position it on the stepper motor drive roller.
6. To pretension the toothed belt, push the plate with the stepper motor down and tighten the locating screw **[3]**. If the pretensioning is correct, it must be possible to depress the center of the belt approx 5 mm until counterpressure is felt.
7. Install the pneumatic cylinder rod to the mounting block and secure it using the screws.

Replacing the fabric transport toothed belt:

1. Lower the transport unit manually onto the working plate as described in Section D, Programming Instructions.
2. Switch the machine off.
3. **Fig. 4:** Slacken the toothed belt **[8]** by removing the Allen screw **[7]** at the bearing and sliding the spacer shaft with the transport rollers **[6]** up.
4. Remove the toothed belt from the drive roller and from the idle roller.
5. To install, place the toothed belt into the idle rollers and drive roller. Pretension the belt by sliding the spacer shaft with the transport roller down and tightening the Allen screw **[7]**. If the pretensioning is correct, it must be possible to depress the center of the belt approx 10 mm until counterpressure is felt.

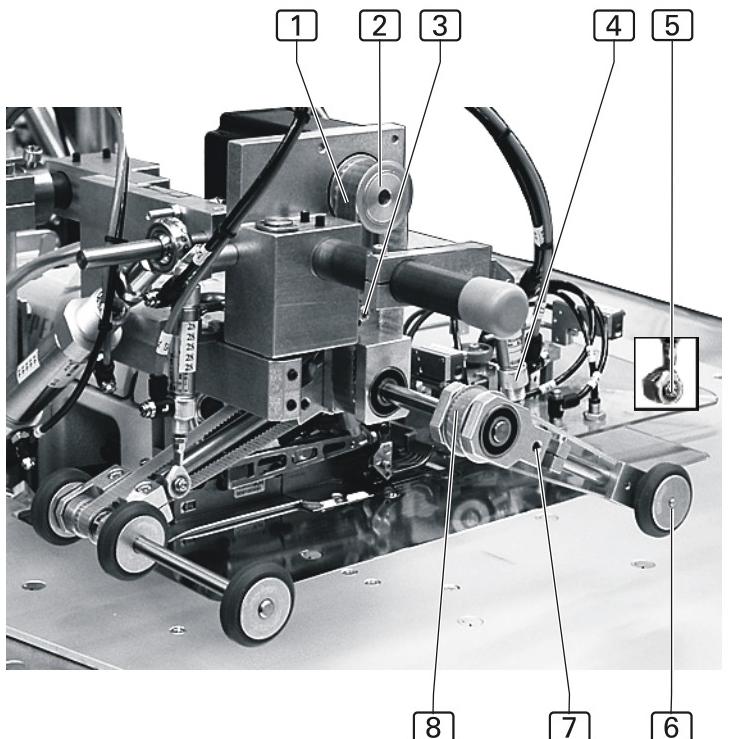


Fig. 4

C.5 Maintenance

C.5.6 Replacing the roller toothed belt

1. Lower the transport unit manually onto the working plate as described in Section D, Programming Instructions.
2. Switch the machine off.
3. **Fig. 5:** Slacken the toothed belt [3] by removing the Allen screw [1] at the bearing and sliding the spacer shaft with the transport rollers [2] up.
4. Remove the toothed belt from the drive roller and from the idle roller.
5. To install, place the toothed belt into the idle rollers and drive roller. Pretension the belt by sliding the spacer shaft with the transport rollers down and tightening the Allen screw [1]. If the pretensioning is correct, it must be possible to depress the center of the belt approx 10 mm until counter-pressure is felt.



NOTE - Transport roller orientation!

After the toothed belt has been replaced,
the distance between the transport rollers and the working
plate must be checked.

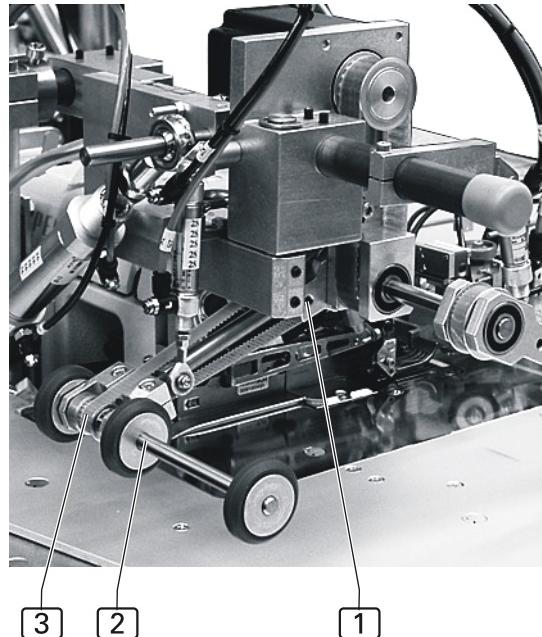


Fig. 5

C.5.7 Adjusting the transport rollers

Fig. 6: The transport rollers of the puller and of the roller should contact the working plate in the lowered position (i.e. distance A must be zero in the lowered position).

The pressure that the transport rollers apply to the working plate is controlled individually for each machine by a pressure reducer (see page C.15)

Setting the distance between transport rollers and working plate:

1. Lower the transport unit manually onto the working plate as described in Section D, Programming Instructions.
2. Switch the machine off.
3. To avoid contact between the working plate and the transport rollers, adjust the position of the pneumatic cylinder clamp [2] to the corresponding spacer shaft [3]:
 - Loosen the clamp locating screw [1] and shift the clamp on the spacer shaft. Slide clamp up to reduce the distance, slide clamp down to increase the distance.

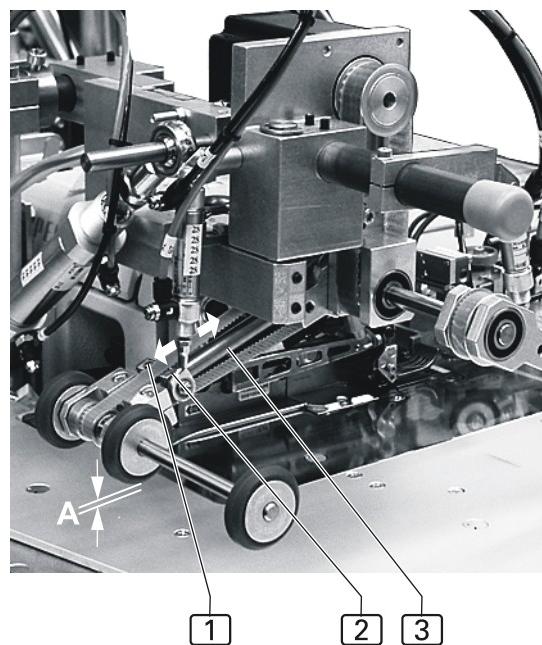


Fig. 6

C.5 Maintenance

C.5.8 Adjusting the contour guide

The following adjustments are made for the contour guide:

Height quick adjustment:

Fig. 7: Use the handwheel **[2]** of the four-stage quick adjustment for the rough adjustment of the material thickness. With each additional stage, the distance between the sliding plate and the working plate increases by a fixed value of 0.8 mm. The selected stage is indicated at the hand-wheel.

Stage 1	0.8 mm
Stage 2	1.6 mm
Stage 3	2.4 mm
Stage 4	3.2 mm

Height fine adjustment:

The adjustment made with the height quick adjustment **[1]** can be fine-adjusted using the height fine adjustment **[2]**. The following should be observed as a rule: The sliding plate **[4]** should lower as far as possible, the fabric must pass easily below the sliding plate.

1. Slide the sewing material below the sliding plate.
2. Push the sliding plate manually down all the way to the stop.
3. To lower the sliding plate even further, rotate the handwheel **[1]** counterclockwise.
4. Pull fabric below sliding plate to check whether the sewing material can pass easily.

Contour roller pressure:

The pressure that the contour roller **[6]** applies is crucial for the continuous guiding of the sewing pieces along the sewing unit stop. The required pressure is determined by trial and error.

1. Line up sewing piece and start machine cycle. If the sewing pieces are shifted sideways away from the stop **[7]**, the pressure is too low; rotate adjusting screw **[3]** counterclockwise to increase the pressure.
2. If the sewing pieces warp at the stop, the pressure is too high; rotate adjusting screw **[3]** clockwise to reduce the pressure.
3. The pressure of the blowing unit **[5]** should remain unchanged.

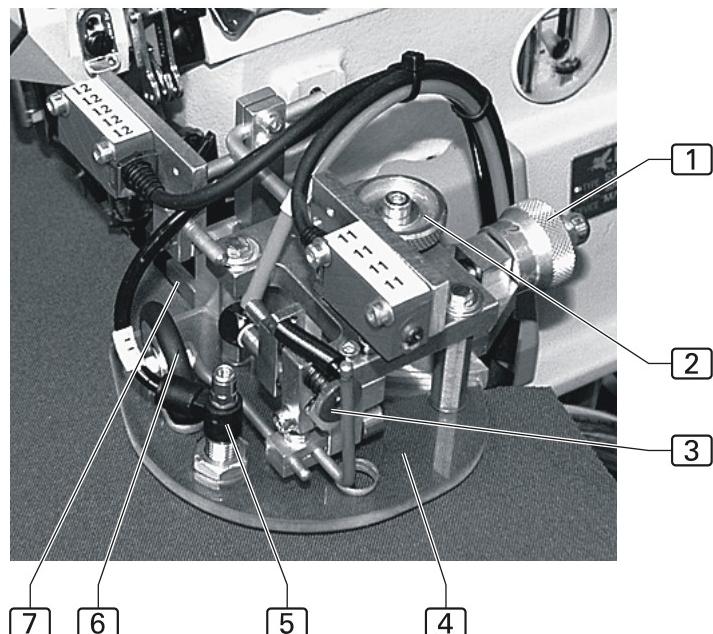


Fig. 7

C.5 Maintenance

C.5.9 Positioning the contour guide photocells

Fig. 11: Clamp blocks secure the contour guide photocells to the rod brackets so that the photocell position can be changed in any given direction. The light beam of the photocells should always be positioned to the center of the corresponding film disk.

To adjust a photocell:

1. To adjust the position in the direction of X: Loosen clamp block locating screw **[1]**.
2. To adjust the position in the direction of Z: Loosen clamp block locating screw **[2]**.
3. The light beam of the sewing start photocell **[3]** is reflected by the polished surface of the sewing unit.
4. The light beam of the contour guide photocell **[4]** is reflected by the film disk through the opening **[5]** at the sliding plate.
5. Adjust the position of the photocells and tighten the locating screws.

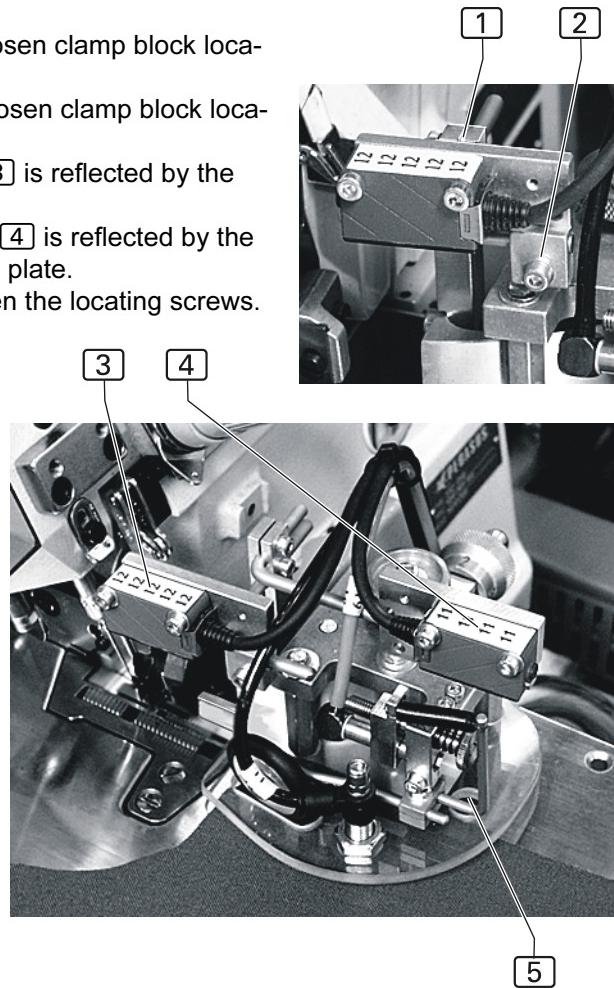


Fig. 8

C.5.10 Adjusting the photocell light sensitivity

The sensitivity of the photocells must be adjusted in accordance with the sewing material used. The adjustment is made using a white cloth at the photocell that starts the sewing process.

1. **Fig. 9:** Ensure that the light beam of the photocell **[2]** is not interrupted by objects.
2. Adjust the sensitivity so that the light beam recognizes the white cloth when it is moved into the sensor area.
3. Rotate potentiometer **[1]** at the photocell face counterclockwise to minimize the sensitivity.
4. Increase sensitivity gradually; after each change, move white cloth into sensor area. When the sensitivity threshold limit is reached, the photocell darkens, and the machine cycle starts.

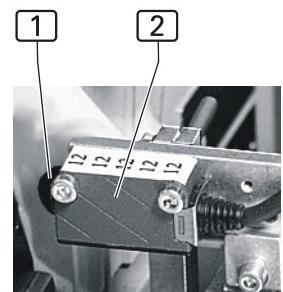


Fig. 9

C.5 Maintenance

C.5.11 Adjusting the kettip knife and stop

Fig. 10: The contour guide stop **[3]** must be offset slightly at a distance **A** of 0.2-0.3 mm in front of the chain cutter knife. The knife must cut thread and fabric residues, but not the sewing piece hem.

To adjust this offset, the entire contour guide is shifted on the cover plate which is installed loosely into the working table recess and secured by magnets.

1. Lift cover plate with contour guide.
2. Remove the two retaining screws **[5]** at the front of the cover plate; loosen the contour guide retaining nut **[4]** at the rear of the cover plate only enough to shift the contour guide.
3. Reinstall cover plate and shift contour guide so that the distance **A** (between chain cutter knife **[2]** and stop **[3]**) is approx 0.2-0.3 mm. Check distance using a feeler gauge.
4. Tighten the two retaining screws **[5]** at the front of the cover plate.
5. Remove cover plate and tighten the contour guide retaining nut **[4]**.
6. Align pressure foot **[1]** to stop **[3]**. Loosen pressure foot locating screw, push pressure foot close to stop, then tighten locating screw. The distance **B** between pressure foot and chain cutter knife should be approx 0.5 mm.

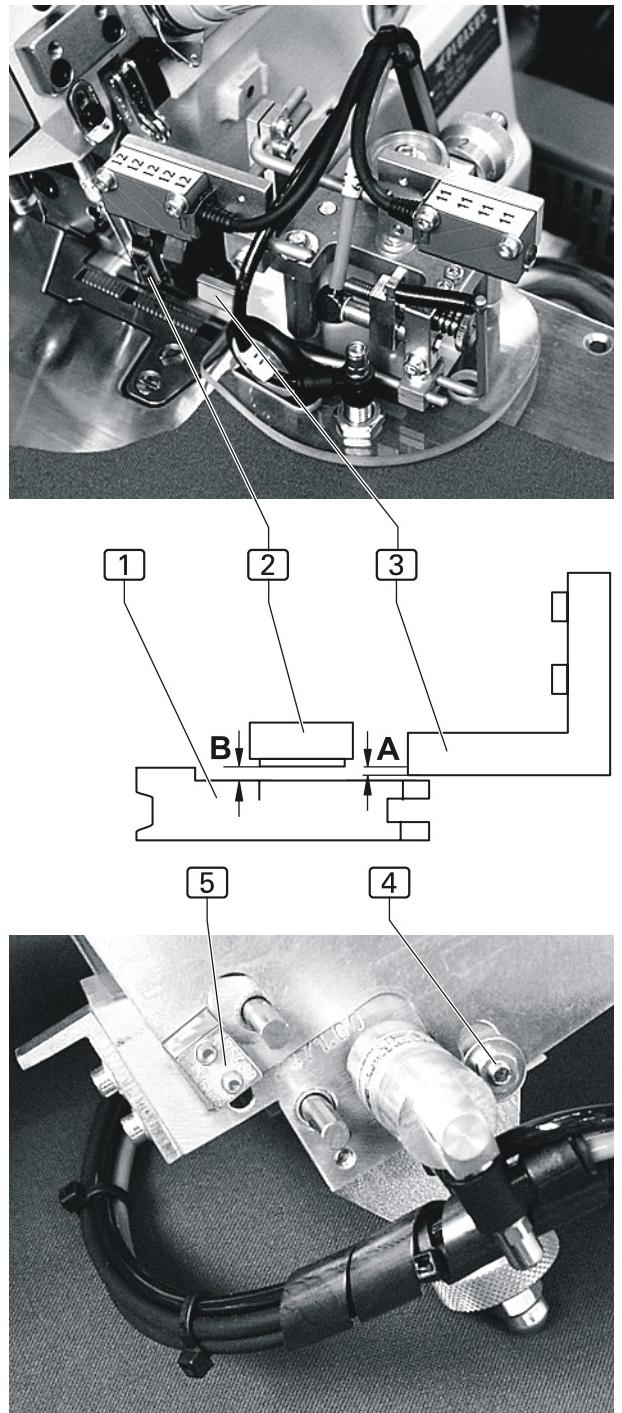


Fig. 10

C.5 Maintenance

C.5.12 Replacing the cross transport toothed belt

1. Disconnect machine from power supply system.
2. Move cross transport all the way to the stop at the left basic position.
3. **Fig. 11:** Remove the screws [3] that secure the cover [4] and remove the cover.
4. Slacken the tension of the toothed belt [5] by removing the two locating screws [2].
5. Remove the locking nuts from the adjusting screws [1] and rotate the two adjusting screws backward.
6. Remove the two retaining screws [6] of the two belt clamps [7] from the pedestal and remove the toothed belt.
7. Place the replacement belt onto the drive roller at the stepper motor and onto the idle roller.
8. The ends of the toothed belt have holes. Align the two belt ends with the belt clamps exactly over the holes of the pedestal and secure the ends to the pedestal using screws.
9. Tension the toothed belt by shifting the mounting plate with the stepper motor and tightening the two locating screws [2].
10. Rotate the two adjusting screws [1] until it is possible to depress the belt in the center of the transport rail approx 10 mm until counterpressure is felt.
11. Tighten the locking nuts of the adjusting screws [1] and the two locating screws [2].
12. Install and secure the cover.

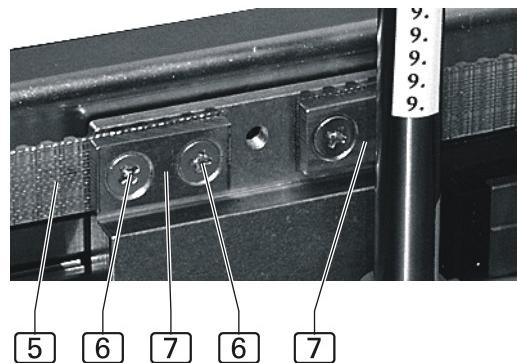
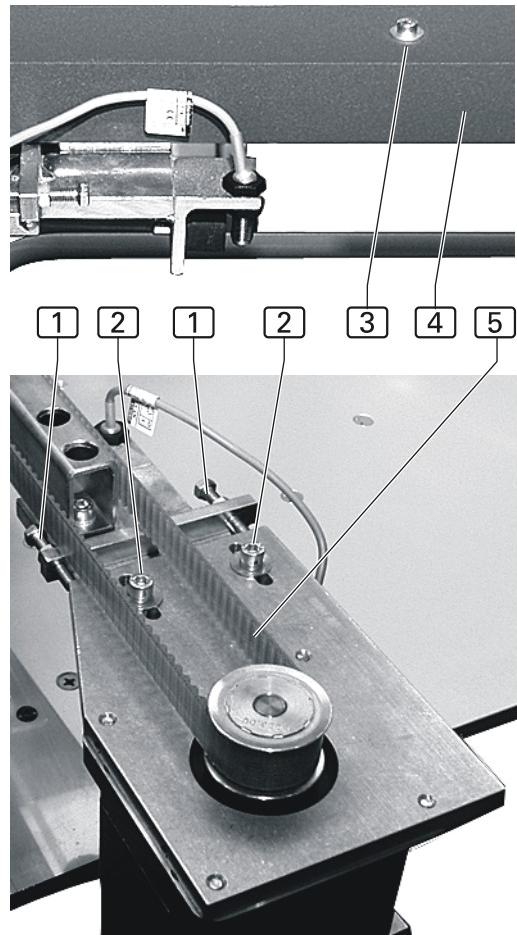


Fig. 11

C.5 Maintenance

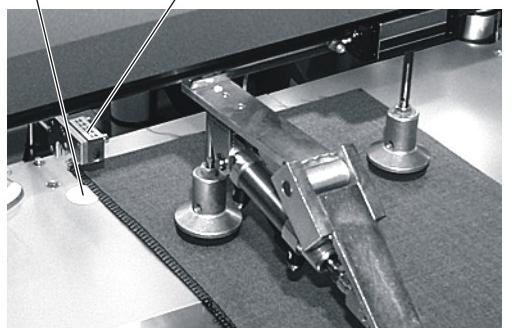
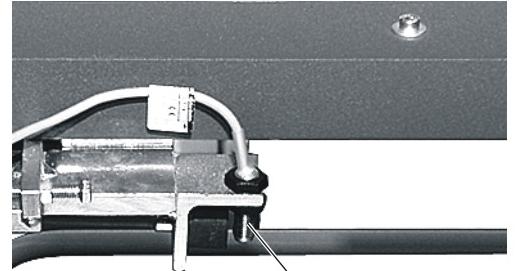
C.5.13 Adjusting the cross transport photocells

Fig. 12: The movement of the cross transport is controlled by two photocells and an initiator:

- Initiator for the basic position **[3]**
- Photocell for the wait position **[2]** in front of the B machine
- Photocell for the transfer position **[4]** at the B machine for transferring the sewing piece to the swing arm

Initiator for basic position **[3]**:

The position of the initiator that determines the cross transport basic position cannot be changed. Two screws secure the initiator in an opening of the backet.

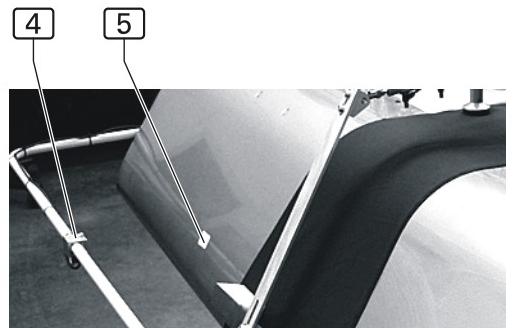


Photocell for wait position **[2]**:

The position of the photocell for the wait position can be changed. The light beam of the photocell should always be positioned to the center of the film disk **[1]**.

To position the photocell:

1. Loosen the locating screw of the photocell clamp block.
2. Position the photocell.
3. Tighten the locating screw of the photocell clamp block.



Photocell for transfer position **[4]**:

The photocell that determines the transfer position at the B machine and therefore the start of the swing arm movement is attached to the protective strap of the sliding panel. The sensor area lies within the rectangular reflective film surface **[5]** at the sliding panel.

1. Loosen the retaining screw of the photocell mounting bracket.
2. Position the photocell.
3. Tighten the retaining screw of the photocell mounting bracket.

Fig. 12

C.5 Maintenance

C.5.14 Adjusting the cross transport and swing arm stamps

Fig. 13: The two stamps of the cross transport [1] and the two stamps of the swing arm [5] are matched to fit the width of the lower third of the trousers panel. The adjustment of the stamps should ensure that they are lowered onto the trousers panel in close vicinity to the fabric edges.

The nut [4] in the guide rail [5] secures the pneumatic cylinder [2] of the stamp.

To change the position of the stamps:

1. Loosen the nut at the pneumatic cylinder.
2. Push the stamp to the desired position (the distance between the outer edge of the stamp and the fabric edge should be approx 5-10 mm).
3. Tighten the nut.

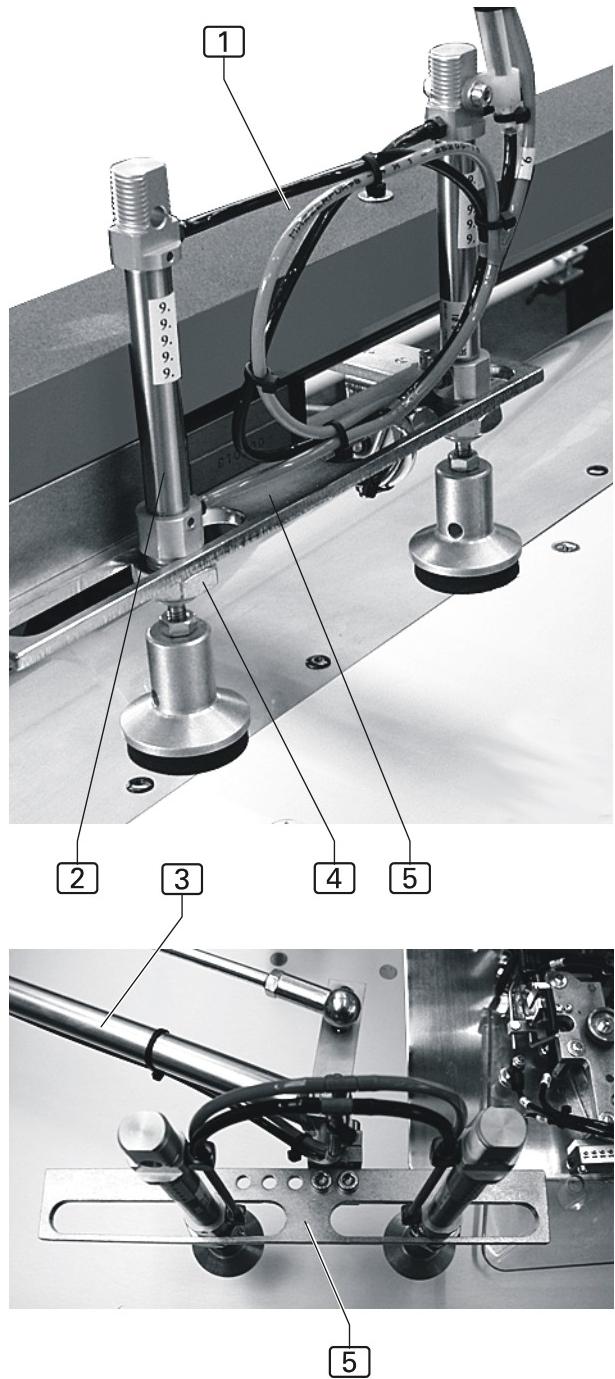


Fig. 13

C.5 Maintenance

C.5.15 Setting the pressures

Fig. 14: To improve the gliding characteristics of the sewing pieces, the working plate has six compressed-air nozzles near the A and B machines. The air blows from below against the sewing pieces; the resulting air cushion reduces friction during transport. The pressure depends on the weight of the material used. The pressure that the rollers of the two transport units apply to the working plate can be matched to fit the thickness of the material used.

The required air pressure that can be set with separate valves must be determined by trial and error. To change the pressure:

1. Pull the valve knob out to unlock the valve, then set the pressure by rotating the valve.
2. To lock the valve, push the valve knob in.

- [1] Transport unit, A machine
- [2] Transport unit, B machine
- [3] Nozzles in B machine working plate
- [4] Nozzles in A machine working plate

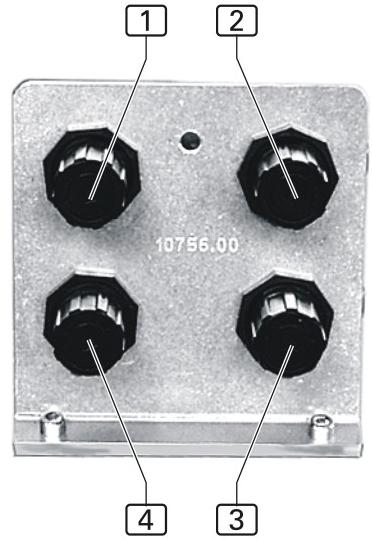


Fig. 14

C.5.16 Inserting the bonding strip at the bonding station

Fig. 15: The bonding strip rolls off a drum. The separator removes the strip from the backing tape and pushes it over the lower stamp [1] of the heating module. To insert the bonding strip:

1. Remove the disk [8] from the drum; the disk is merely pushed on.
2. Attach the bonding strip roll [9] to the drum and push the disk back onto the drum.
3. Rotate the pressure pad [5] of the guide [4] sideways.
4. Separate the bonding strip from the backing tape [6] and route the strip through the slot [3].
5. Rotate the pressure pad back onto the guide and cut the bonding strip at the edge [2] of the guide.



NOTE - Position of the lower stamp!

The proper function of the bonding unit is only ensured if the lower stamp is in the lowered position. By actuating the switch [5], the lower stamp can be moved to the upper or lower position. For cleaning, the lower stamp is moved to the upper position, and the bonding station heating module is switched off.

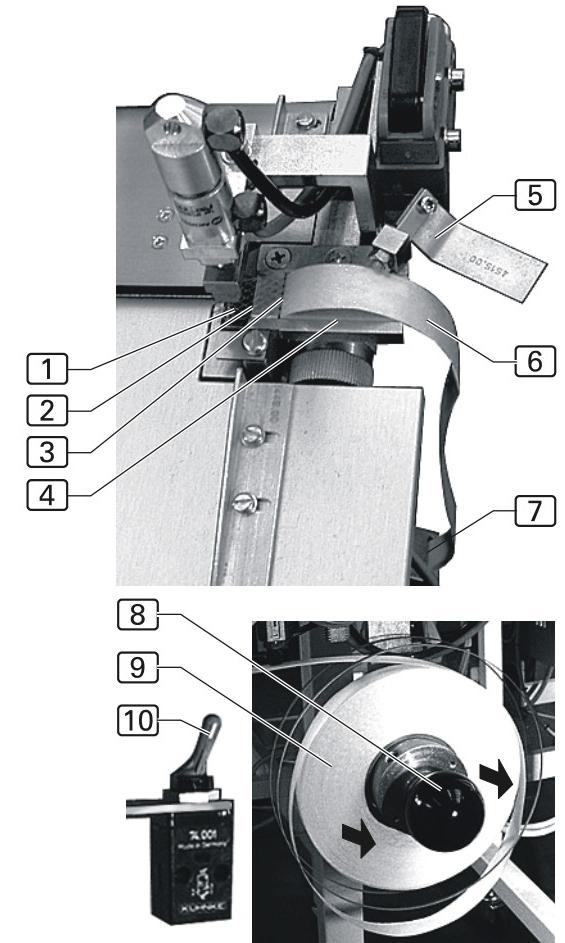


Fig. 15

C.5 Maintenance

C.5.17 Adjusting the stacker control cams

Fig. 16: The motion sequence of the individual stacker linkages is controlled by the roller valve **1** and by the speed of the pneumatic cylinders **7**.

- To change the beginning or the end of a motion section, the position is shifted along the start cam **4** or along the closing cam **5** on the linkage.
- The speed of the motions can be changed using the throttles **6** and **8** at the pneumatic cylinders.

Changing the cam position:

- Loosen the locating screw **2** or **3** of the corresponding cam.
- Shift the start cam **4** or the closing cam **5**.
- Tighten the locating screw.

Setting the speed of the motion sequence:

- To change the speed of the forward motion, rotate the adjusting screw of throttle **6**.
- To change the speed of the rearward motion, rotate the adjusting screw of throttle **8**.
- Directions of rotation:
 - Rotate throttle counterclockwise to increase the speed.
 - Rotate throttle clockwise to reduce the speed.

Coordination of the motion sequence:

If the roller valve switches early, the linkage strikes. The distance between the start cam and the roller valve contact **5** must be increased.

If the roller valve switches late, the motion sequence is interrupted. The distance between the start cam and the roller valve contactor must be reduced.

The positioning of the cams must ensure that the closing cam switches the motion of a linkage off when the start cam of the subsequent linkage has actuated the contact at the roller valve. The motion sequence of the stacker consists of six steps:

- Cylinder 1 picks up.
- Roller valve 12 is activated.
 - Cylinder 2 lifts.
- Roller valve 32 is activated.
 - Cylinder 3 throws over.
- Roller valve 11 is activated.
 - Linkage rearward motion starts.
- Roller valve 22 is activated.
 - Cylinder 2 lowers.
- Roller valve 14 is activated.
 - Cylinder 1 returns to basic position.

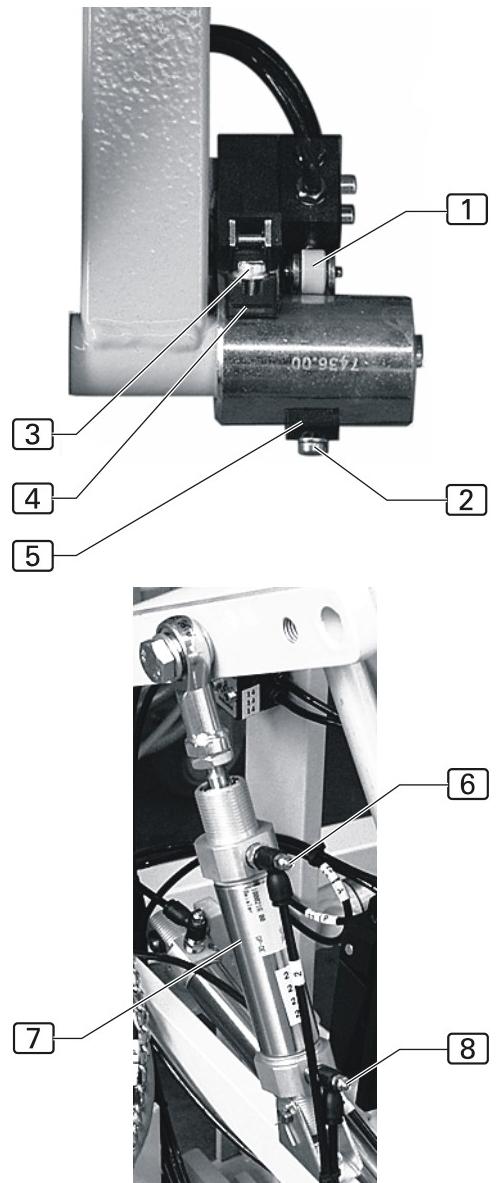


Fig. 16

C.5 Maintenance

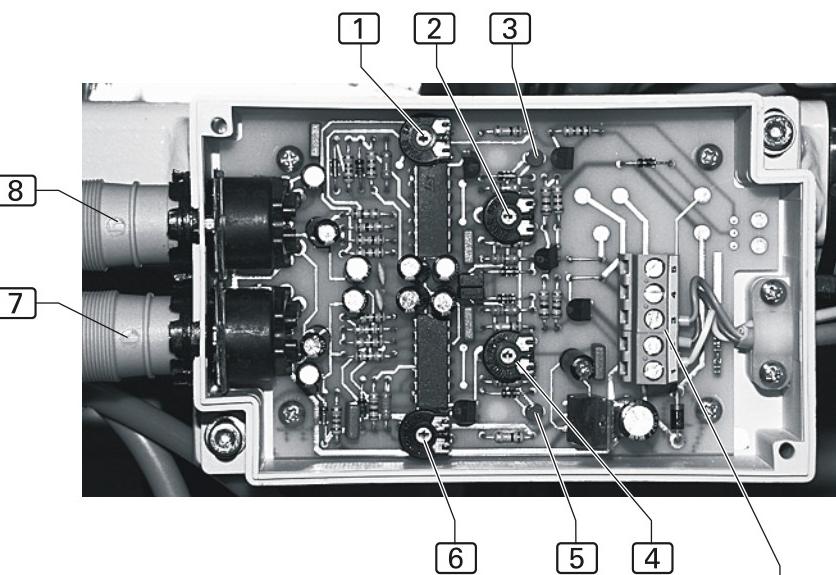
C.5.18 Adjusting the thread monitors

Fig. 17: The two thread monitors

- [7] thread monitor 1
- [8] thread monitor 2

monitor the two threads of the B machine. You can use the PCB to adjust the response delay and the response sensitivity of the thread monitors. The adjustments are made separately with the corresponding potentiometers. To extend the response delay or to increase the response sensitivity, the corresponding potentiometer is rotated clockwise (in the direction of +).

- [1] Response sensitivity of thread monitor 2
- [2] Response sensitivity of thread monitor 2
- [3] LED thread monitor 2
- [4] Response delay of thread monitor 1
- [5] LED thread monitor 1
- [6] Response delay of thread monitor 1



NOTE - A machine thread monitor!

If the threads at the A machine are to be monitored, an additional PCB must be installed.

XD1	+ 24V	→	<input type="checkbox"/>
	GND	↔	<input type="checkbox"/>
	NPN	↑	<input type="checkbox"/>
	PNP	↓	<input type="checkbox"/>
	—	—	<input type="checkbox"/>

Fig. 17

C.5 Maintenance

C.5.19 Stepper motor PCB with transmission

Fig. 18: The two thread monitors of the A and B machines can be used to adjust the response delay and the response sensitivity. The adjustments are made separately with the corresponding potentiometers. To extend the response delay or to increase the response sensitivity, the corresponding potentiometer is rotated clockwise.

- [1] B machine: Jumper (set)
- [2] B machine: Efka controller
- [3] B machine: Initiators
- [4] B machine: Top transport connection (X58), differential transport (X57), puller (X56)
- [5] B machine: 24 V power supply
- [6] A machine: Jumper (**not set**)
- [7] A machine: Efka controller
- [8] A machine: Initiators
- [9] A machine: Top transport connection (X55), differential transport (X54), puller (X53)
- [10] A machine: 24 V power supply
- [11] A machine: Fan
- [12] A machine: EPROM CRC 0105
- [13] B machine: Fan
- [14] B machine: EPROM CRC 0105

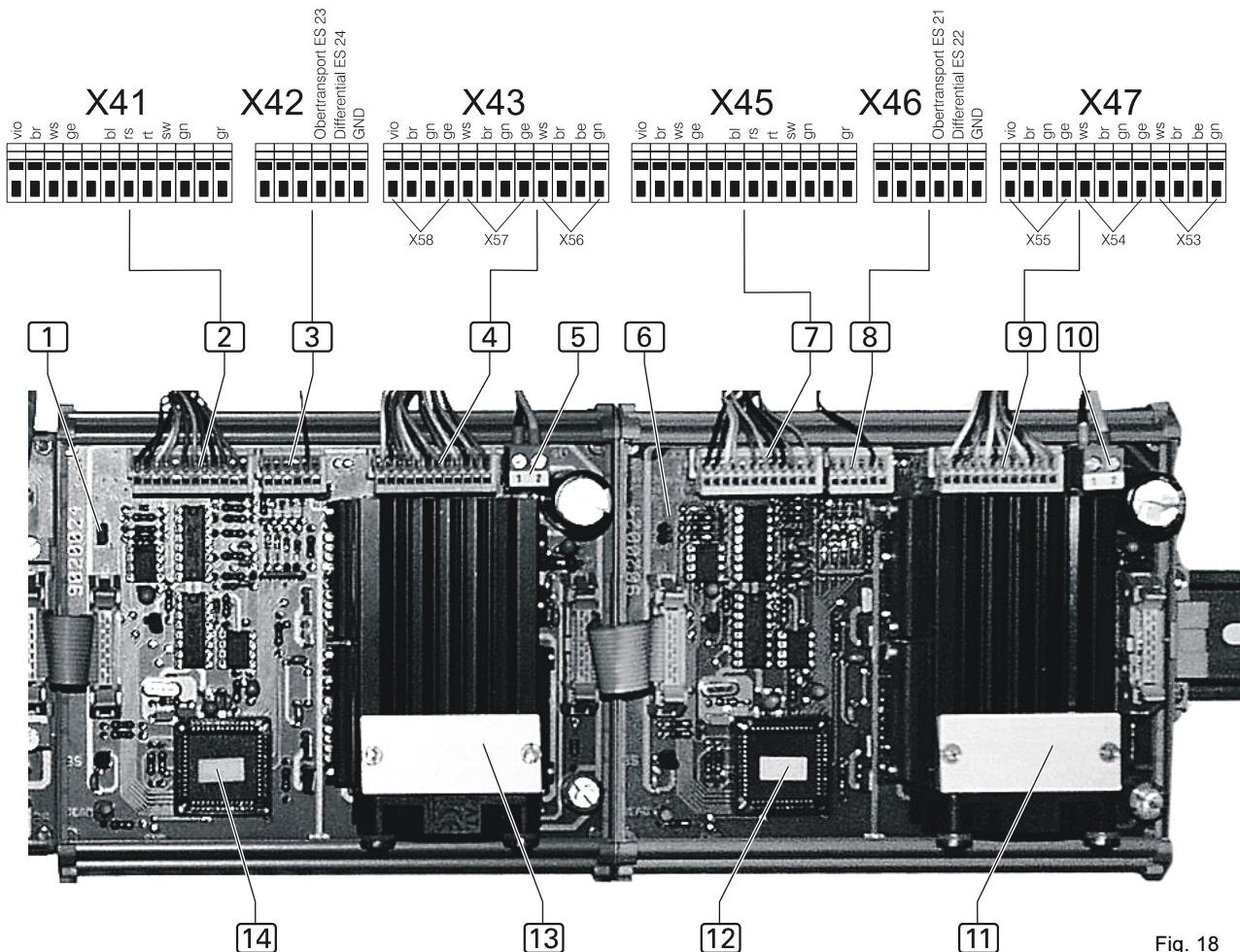


Fig. 18

C.5 Maintenance

C.5.20 Inputs and outputs of the main PCB

Fig. 19: The inputs and outputs for controlling the machine functions are connected to the terminal strips X24-X27.

- [1] X 24 Inputs
- [2] X 25 Outputs
- [3] X 26 Outputs
- [4] X 27 Inputs

X24 Inputs

Swing arm	ES02	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Cross transport	ES01	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bonding clamp	ES04	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bonding start	ES05	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Thread monitor A	ES08	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Thread monitor B	ES09	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Photocell C	ES10	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Cont. guide photoc. A	ES11	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Prog. start photoc. A	ES12	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Prog. start photoc. B	ES13	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Crs. trnsp. stop photoc.	ES14	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Protect. strap photoc.	ES15	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Cont. guide photoc. B	ES16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

X25 Outputs

Pressure foot up A	Y14	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Tension blowing A	Y15	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Chain cutting A	Y16	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Table blowing A	Y17	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Dirt aspiration A	Y18	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Crs. transp. stamp A	Y19	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Cont. guide down A	Y20	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Puller down A	Y21	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Roller down A	Y22	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Contour roller A	Y23	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Pressure foot up B	Y24	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Tension blowing B	Y25	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Contour roller B	Y26	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Fly blowing B	Y27	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Stacker start	Y28	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Stacker motion	Y29	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

X26 Outputs

Chain cutting B	Y30	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Table blowing B	Y31	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Dirt aspiration B	Y32	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Contour guide down B	Y33	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Puller down B	Y34	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Roller down B	Y35	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Swing arm stamp down	Y36	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Swing arm in	Y37	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Transport up A / B	Y38	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Support swinging	Y39	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bonding clamp down	Y40	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Bonding station down	Y41	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Pressure foot up C	Y42	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Chain/Dirt aspiration C	Y43	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Puller swinging	Y44	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

X27 Inputs

Photocell	Y22	○	○
		17	18

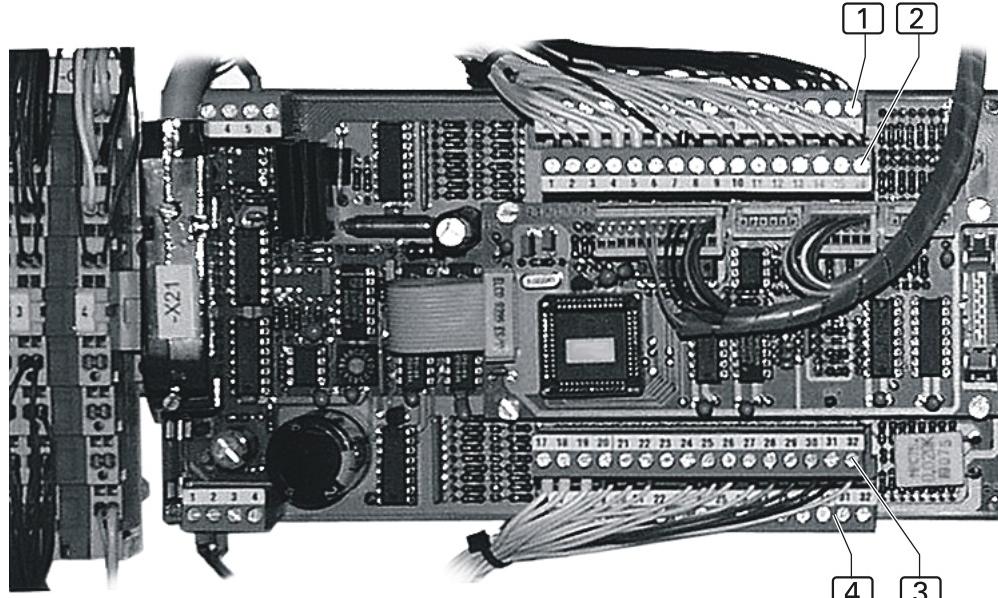


Fig. 19

C.5 Maintenance

C.5.21 Adjusting the stepper motor PCB

The PCB that controls the stepper motor is installed in the switchbox.

 **NOTE - Machine cycle!**

Prior to a replacement of the PCB, the machine should be moved manually back to its basic position to prevent collisions among moving machine components when the machine is switched back on.

1. Depressurize the compressed-air system of the machine and disconnect the compressed-air hose of the machine from the on site compressed-air supply system.
2. Move the cross transport to its basic position.



CAUTION - Damage to electrical components!

The positions of switches on the PCB must not be changed as otherwise the affected electrical components can be damaged or become unusable!

Disconnect the machine from the power supply system and protect it from accidental reconnection.

Fig. 20: Setting the PCB switches:

1. Set the step number:
 - at the DIP switches **[1]** and **[2]**,
 - microstep at the hook switches **[6]** and **[7]**.
2. Set current lowering at DIP switch **[3]**.
3. Set DIP switch **[4]** to ON.
4. Set motor phase current by rotating knob **[5]** to position **F**.
5. Switch on supply voltage. When the PCB has been set correctly, the LED **[8]** (ready) illuminates, the ready relay is energized.

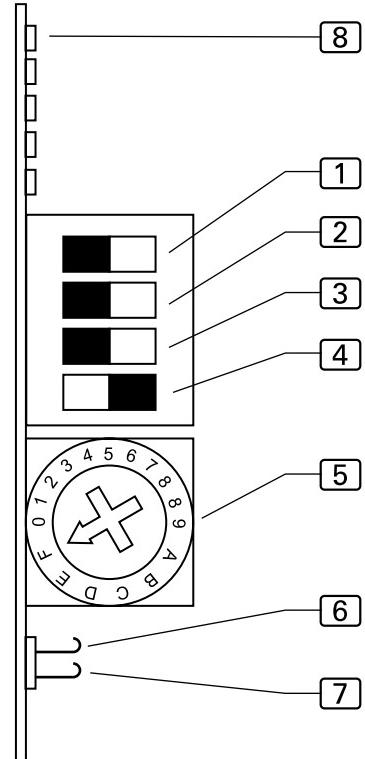


Fig. 20

Microstep		DIP switch 1	DIP switch 2
Hook switch [6] open Signal = 0	Hook switch [7] closed Signal = 0		
Hook switch [6] closed Signal = 1	Hook switch [7] open Signal = 1		
200	2000	ON	OFF
400	4000	ON	ON
500	5000	OFF	ON
1000	100000	OFF	OFF
Signal 0 = deenergized, Signal 1 = current-carrying			
Rotating knob position	Phase current	DIP switch 3	Current lowering
F	5.50 A	OFF	ON
		ON	OFF

C.6 Troubleshooting

Error message	Cause	Correction
Photocells dark: 10; 11; 12; 13; 14; 15; 16; 17	Photocell does not respond to change of light	Adjust photocell correctly; reflective film dull, clean if required; replace photocell
ES 02	Switch not pressed	No air pressure: adjust switch; replace switch
I/O Communication Error	Error in data transmission between controller and I/O module	Check all cable connections (flat ribbon cable) to 9020013 / . 9020024; if required, replace controller module 9020013 or module 9020024
Cross transport position read error	No valid cross transport position readable from controller	If this message appears only intermittently (alternating with other error messages), data transmission via bus is faulty: Check flat ribbon cable connector of adapter module 9020020 > 9020013; if required, replace adapter module 9020020; if required, replace I/O module 9020013.
Cross transport position	The cross transport did not reach the target position	Check CT motor with test program „Cross transport motor continuous test“; check connections to cross transport; Check 110 V DC supply for stepper motor; replace BERGER power unit; replace BERGER motor; replace adapter PCB 9020020; if motor fails to run, the cause may be the cross transport driver circuit or power unit: Check the state of the LEDs at the power PCB (BERGER) and continue troubleshooting in accordance with diagnostics for BERGER motor, as required; check connection to cross transport (connector); check connection between 9020020 and power unit (connector); replace adapter PCB 9020020.
Cross transport stop	Limit switch ES01 has switched during transport although internal distance counter detected that cross transport was far from this switch	– Check distance counter with test program (steps); if counter is faulty, replace motor or adapter PCB 9020020; if counter is OK, check switch ES01 and connections.

C.6 Troubleshooting

Error message	Cause	Correction
Error 09: Cross transport cannot leave the switch	During the initialization motion after switch-on, the cross transport has reached ES01 but cannot move away from this switch (direction is not reversed) –	Using the test program „CT motor actuation“, enter slower speed so that CT motor runs and reverse direction using arrow keys; if motor fails to reverse direction: Check connection between 9020020 and power unit (connector); check BERGER power unit; if motor reverses direction, check limit switch ES01.
Cross transport scan photocell 14	While moving from the A machine to the B machine, the photocell 14 failed to detect the sewing piece properly	Check photocell and film; check programmed distances; Check LED 5 at I/O module 9020013; this LED indicates the status of photocell 14.
B head error post-sewing with F2	Failure at B machine	The sewing of a sewing piece in the B machine cannot be finished; continue sewing manually
B head runs too long	Time-out at photocell 13 (does not light during sewing after 10 seconds)	Failure during sewing process; possibly a sewing piece blocks the transport or conceals the reflective film
A head thread breakage	A machine thread monitor responds	Pass thread through needle; change sensitivity in GP 22;23.
B head thread breakage	B machine thread monitor responds	Pass thread through needle
Error 48: I/O RES	Internal hardware failure during data transmission	Replace adapter PCB 9020013 – 9020020

C.7 Technical data

Power supply

Supply voltage	230 V ±10 %, 50/60 Hz
Power connection	(1, N, PE) AC
Power consumption	1.3 kW
Fusing	16 A

Dimensions of the machine

Length x Width x Height in mm	2300 x 2200 x 1700
-------------------------------	--------------------

Table height

Adjustable height in mm	790 - 1240
-------------------------	------------

Weight

Overall weight	approx 200 kg
----------------	---------------

Compressed air

Operating pressure	6 bar
Quality	oil-free
Air consumption	40 NL/AT

Section D

Programming Instructions

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D.1 Operating panel

D.1.1 Description of the operating panel

Fig. 1: The operating panel is the display and data input medium of the machine control. It contains the microprocessor that controls the machine and the storage media (EPROM) for backups of the program control.

Display [1]

The display shows information about the machine control and the sewing program parameters. If a function for a sewing program is enabled or disabled, the symbol for that function and the pertaining parameter value are displayed or disappear.

Slot [2] for memory card

The memory card is the storage medium for backups of any machine control data. Sewing programs can be copied to the memory card and retrieved back into the machine control, if required.

Program stop switch [3]

This switch is used for cancelling the machine cycle.

Numeric keypad [4]

Use the numeric keypad to enter all changeable numeric values. The sewing programs M01-M09 are activated by entering the corresponding numbers. To activate the sewing programs M10-M20, press the M key, then enter the corresponding numbers. Use the P key to select submenus, to confirm data input or to exit the programming mode.

Arrow keys [5]

Each pressing of the UP or DOWN arrow key will move the cursor one line up or down in the selected menu. Use the LEFT or RIGHT arrow key to mark the desired parameter in the selected menu or to scroll through the selected menu if the parameter list consists of several pages.

Function keys [6]

Use the function keys to select the program control menus.

Symbol bar [7]

The symbol bar indicates the menus that can be selected directly from the start level by using the function keys. All other menus for setting machine or program functions can be selected from the various program levels. The display of the operating panel shows the pertaining menu symbols.

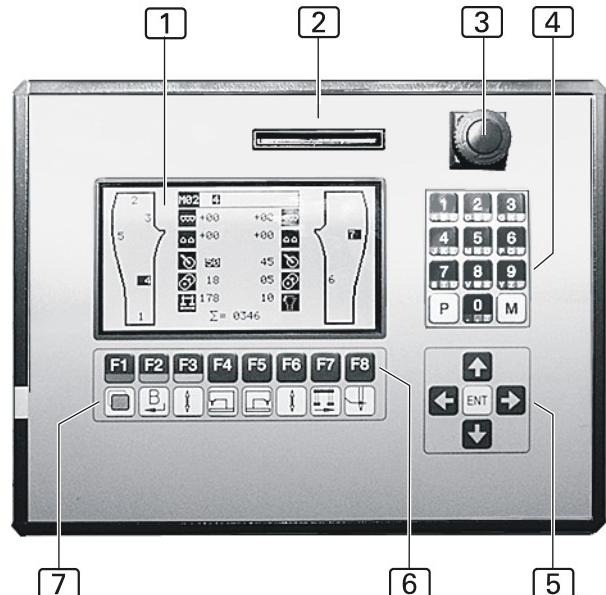


Fig. 1

D.2

Program control

2.1 Program control layout

The program control is controlled using three different kinds of menus:

1. Operational menus with direct access
2. Programming menus
3. Service menus

Operational menus

The operational menus are used to directly select functions that

- allow corrections of the sewing process,
- support auxiliary processes required during machine operation, e.g. passing thread through needles,
- allow the enabling or disabling of machine functions, e.g. differential transport or top transport.

Programming menus

The programming menus are used for programming sewing programs and pertaining seams:

- modifying existing seams,
- copying and renaming sewing programs,
- programming new seams,
- erasing seams.

Service menus

The service menus are used for managing sewing programs; they offer functions that support the set-up and the testing of the machine:

- transmission and storage of data,
- input/output tests for the initiators of the compressed air system,
- diagnostic tests for motors,
- additional programs.

Access to some of the service menus and programming menus requires an access privilege that protects the data from unauthorized manipulation. In the service menu, data can only be input or changed after the service code has been entered. If required, the service code can be requested from the machine manufacturer.

Menu level structure

The operational menus consist of direct access 1 and direct access 2.

The programming menus consist of level 1 and level 2.

The service menus range from level 2 to level 5.



CAUTION - Machine damage!

Some of the menu inputs will start individual machine components or a machine run. If components have been partially or completely removed or are not operational, machine components may be damaged.

Do not input data unless the machine is operational!

D.2 Program control

Sewing program

A sewing program controls the entire machine operation during production:

- transport of the sewing piece to the sewing head,
- sewing of a seam,
- the transfer of the sewing piece to the B machine sewing head,
- the stacking of the sewing piece.

A sewing program is determined by three different kinds of values:

- **Sewing functions**

Sewing functions are machine components that can be enabled or disabled to perform part of a sewing process, e.g. roller or stacker.

- **Sewing parameters**

Sewing parameters are settings that refer only to one particular seam of the sewing program. Changes to the sewing parameters will affect only the currently selected seam of the sewing program for which the setting is made.

- **Basic parameters**

Basic parameters are values that control the basic functions of the machine. Changes to basic parameters will result in changes of all stored sewing programs.

Sewing programs can be extended, renamed or copied.

In a sewing program, at least one seam must be activated. If a sewing program consists of several seams, a subset of seams may be deactivated.

Basically, it is possible to create entirely new sewing programs; however, it is easier to:

- copy a factory-programmed sewing program to a free location in the memory and to modify this program,
- copy an already modified sewing program to a free location in the memory and to adapt it further in accordance with the intended purpose.

Seam number

Each sewing program can be executed with up to seven seams. The seams are assigned to the sewing program by seam numbers (1, 2, 3, 4, 5, 6, 7).



NOTE - Editing seams!

Any data changes in the program control, such as

- **setting parameters,**
- **changing seam names,**
- **copying seams,**
- **erasing seams,**

always apply to the marked seam of the sewing program shown on the display.

D.2

Program control

Memory

Sewing programs are stored in the memory (**M**).

The program control memory can contain up to 20 sewing programs
(M 01-M 20).

All sewing programs stored in the memory can be copied and stored to
the memory card for data backup.

Factory settings

The program control has three factory-installed sewing programs.

- **M 01-M 03 for standard fabric materials.**
- **M 09 Sewing program for manual post-sewing.**
- **The mamory locations M07-M08 are freely programmable.**
- **M 10-M 20 are reserved for modified or freely programmable se-
wing programs.**

The symbols for the sewing programs indicate the sections of the seam
for which fullness has been programmed.



M 01 normal rear panel



M 02 rear panel with excessive waist curve



M 03 front panel with knee lining

D.2 Program control

2.2 Menu level overview

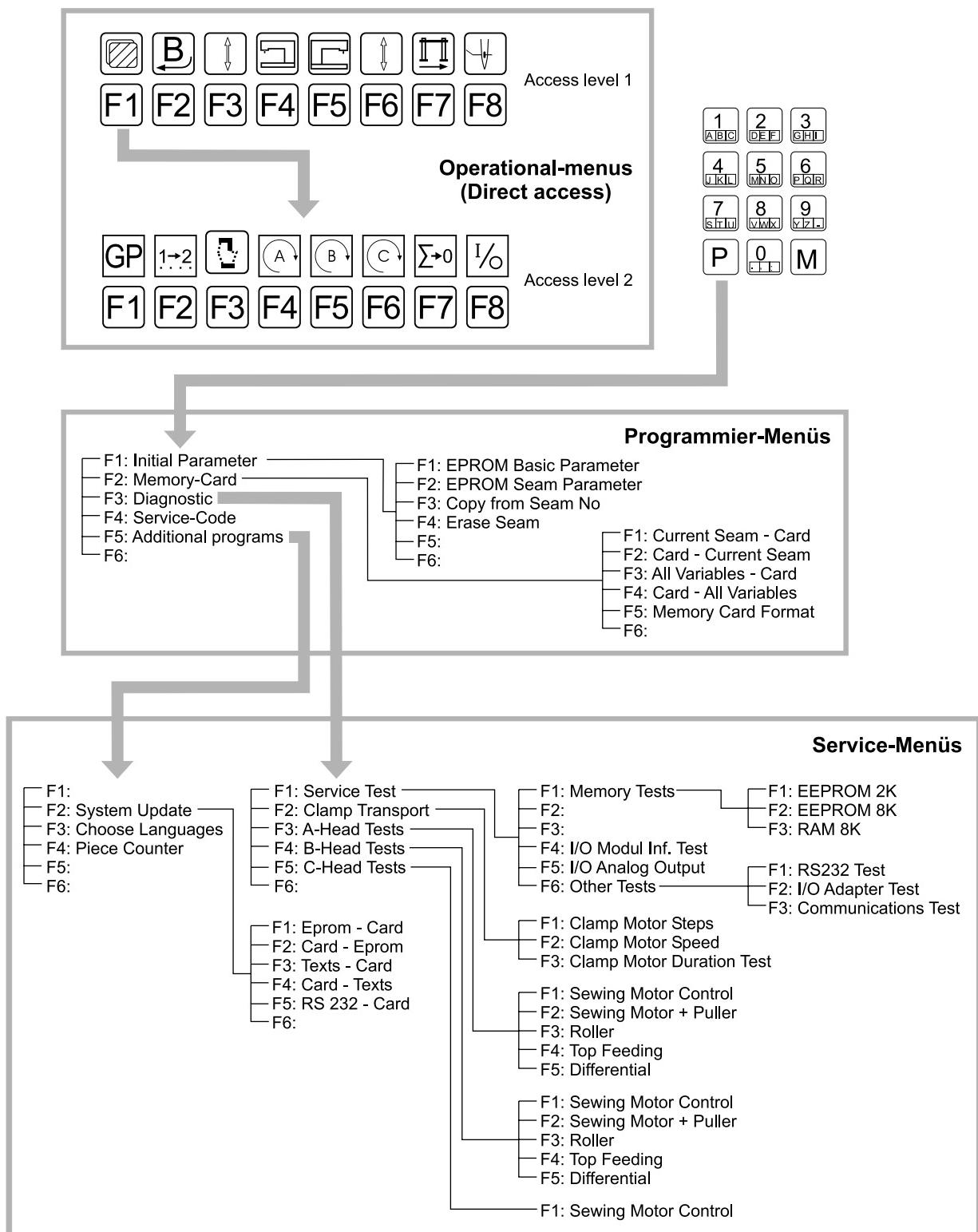


Fig. 2

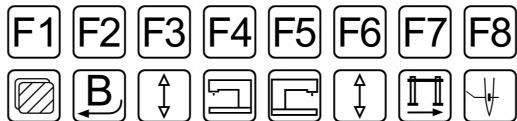
D.3 Programming

3.1 Operational menus

The functions of the operational menus extend over two access levels. The menus can be selected after the program control has been initialized or directly after each RESET.

■ Functions on access level 1

The function keys for access level 1 are assigned to the symbols above them. These symbols remain unchanged and are always visible.



F1 Select operational menu access level 2

F2 Resume the sewing process at the B machine

F3 A machine: Change sewing parameters/Enable or disable machine functions

F4 Select machine parameters for A machine

F5 Select machine parameters for B machine

F6 B Machine: Change sewing parameters/Enable or disable machine functions

F7 Move cross transport manually

F8 Pass thread through needles

■ Selecting access level 2

- Press the  key


■ Resuming the sewing process at the B machine

After the sewing process at the B machine has been interrupted, it can be resumed by lining up the sewing piece at the contour guide photocell. This manual interference in the machine cycle may be necessary e.g. if a failure occurs in the cross transport.

1. Stop the sewing process of the B machine:

- Press the  key


2. Resume the sewing process of the B machine:

The automatic sewing process is resumed when the sewing piece is lined up manually at the photocell of the B machine.

D.3 Programming

■ Changing sewing parameters/sewing functions (A or B machine)

The sewing parameters of a sewing programs can be changed separately for the A and B machines in three stages:

1. Quick change of the major parameters for a sewing function by using the input fields.
2. Access to the complete parameter list of a sewing function.
3. Enabling or disabling a sewing function or machine function.

Changing the major parameter of a sewing function by using the input fields:

1. Select the function at the A machine or B machine:

- Press the **F3** or **F6** key
-

until the symbol assigned to the input field appears on a black background.

2. Increase or reduce the value using the arrow keys:

- Press the **◀** or **▶** key

3. Confirm input:

- Press the **P** key

Fig. 3: Enabled functions **1** are displayed as inverted symbols. A disabled function **3** appears as an icon on a bright background. The parameter value assigned to a function is displayed in the corresponding input field **2** to the right or to the left of the function symbol.

The parameters assigned to the functions are either the additional increase or the reduction of basic values or the direct change of the major parameters of a seam.

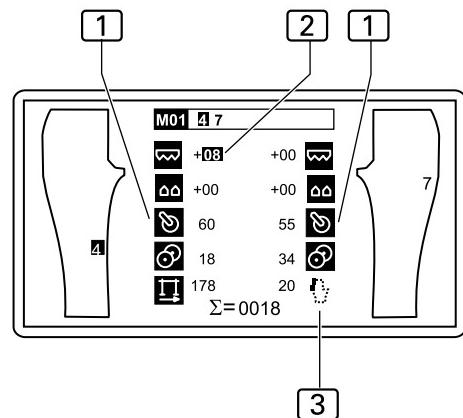


Fig. 3

Access to the complete parameter list of a sewing function:

1. Select the function at the A machine or B machine:

- Press the **F3** or **F6** key
-

until the symbol assigned to the input field appears on a black background.

2. Open the parameter list:

- Press the **ENT** key

The parameter list for the sewing function is displayed.

D.3 Programming

3. To move up or down in the parameter list:

- Press the or key

The input field for the parameter appears on a black background.

4. Modify the value:

- Press the or key

or enter a two-digit or three-digit value using the numeric keypad. Input sequence: Hundreds digit, tens digit, units digit.

5. Confirm input and exit menu:

- Press the key

Enabling or disabling sewing functions or machine functions:

For specific sewing patterns or as the result of a specific material behavior, all six functions can be enabled or disabled individually or in combinations.

1. Select the function at the A machine or B machine:

- Press the or key



until the symbol assigned to the input field appears on a black background.

2. Move to the basic parameter menu of the selected function:

- Press the key

3. Enable or disable the function:

- Press the key

4. Confirm input:

- Press the key

Fig. 4: At the B machine **1** where the inseam **2** is effected, press the F8 key **4** to enable the puller **3** function. When this program function is selected, the parameter list assigned to this specific sewing function **5** is opened.

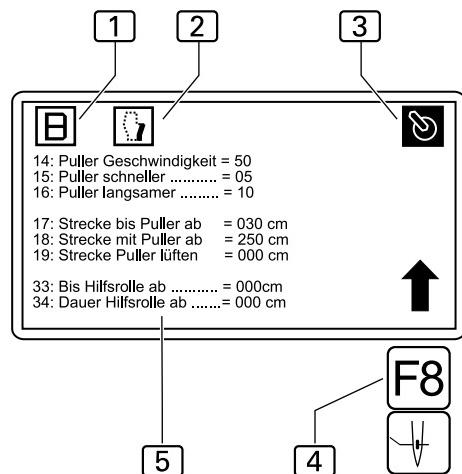


Fig. 4

D.3 Programming

Functions of special parameters:



Top transport



Differential transport

To ensure the correct width distribution, the transport characteristics of differential transport and top transport must be fit to match the material of the knee lining. This is required when waved lining is sewn.

For this purpose, the quick adjustment can be used to change the orientation of the differential transport unit or of the top transport unit to the sewing unit in a value range of -19 to +19. **This setting affects only the section of the seam for which fullness has been activated.**

Fig. 5: Splitting the seam into sections:

Within the sewing range, the trousers panel splits into five sections:

- Side seam **A** with basic setting S1 - S4 = 15 cm, S5 is the remaining trousers length.
- Inseam **B** with basic setting S5 - S2 = 10 cm, S1 is the remaining trousers length from photocell 15.
- The knee lining **C** extends over four of these sections.

For each section, the length can be varied and the pertaining fullness (quantity) can be preset with the program control.

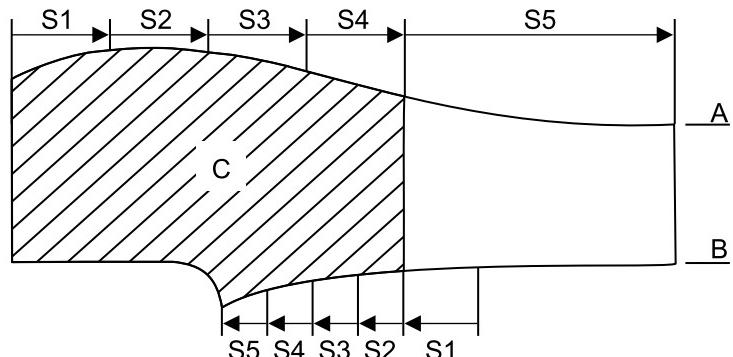


Fig. 5

Changing the fullness by accessing the complete parameter list of the sewing function.

Basic setting:

When this menu is opened, the input field **[3]** of the basic setting parameter is activated (i.e. it appears on a black background) and can be changed. If none of the individual sections has been activated, the fullness (quantity) of the basic setting refers to all five sections.

Fig. 6: The first section **[1]** is deactivated, the other four sections **[2]** are activated (sections 2-5 appear on a black background and are marked as active).

Functions:

- An individual section is activated or deactivated by pressing the function key below it **[4]**.
- The function SLOW (available for differential transport only) is activated by pressing function key F1 **[5]** and the key for the corresponding section at the numeric keypad (each activated section appears on a black background).

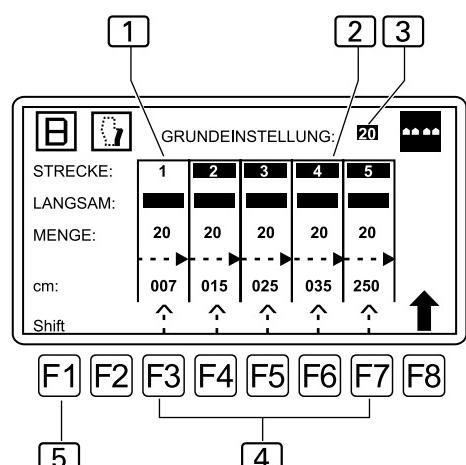


Fig. 6

To set the fullness range values separately for differential transport and for top transport:

1. Fullness basic setting for all individual sections.

D.3 Programming

2. Fullness (quantity) for a section that has to be activated so that the setting is enabled.
3. Length of an individual section for which fullness is to be enabled.
4. Function SLOW SEWING (only for differential transport setting)

 **NOTE - Quick access!**

The quick access for fullness (value range -19 to +19) applies only to an activated section. If a section is deactivated, sewing is performed using the basic settings or using the specific values that have been set for a section.

Settings for differential transport and top transport:

1. Modify the value:
 - Press the  or  key
or enter the two-digit value using the numeric keypad. Input sequence: Tens digit, units digit.
2. Confirm input and exit menu:
 - Press the  key

Section:

1. Activate/deactivate individual sections:

- Press the  to  key

2. Confirm input and exit menu:

- Press the  key

Setting fullness (quantity) and length (cm) of the section:

The input fields are scrolled from left to right.

1. Activate/deactivate input field:
 - Press the  or  key
2. Modify the value:
 - Press the  or  key
or enter the two-digit value using the numeric keypad. Input sequence: Tens digit, units digit.
2. Confirm input and exit menu:
 - Press the  key

D.3 Programming



Puller speed

The photocell determines the deviation of the fabric contour from the ideal routing and adjusts the puller speed accordingly, if required.

- If the sewing pieces are shifted sideways away from the stop, the puller speed is too high,
- if the sewing pieces warp at the stop, the puller speed is too low.

14 PULLER SPEED

Major parameter/basic setting for speed

15 PULLER FASTER

Speed increase if sewing piece warps at stop

16 PULLER SLOWER

Speed reduction if sewing piece is shifted away from stop

17 STITCH TILL PULLER DOWN

Distance after sewing start before the puller is lowered

18 STITCH WITH PULLER DOWN

Length of the distance along which the puller pulls the sewing piece

19 STITCH TILL PULLER UP

Length of the distance along which the puller lifts to slacken the sewing piece

33 WAY TO HELP ROLL CLOSE

A machine: Distance after sewing start before the contour roller is lowered
B machine: Distance after which photocell 15 brightens

34 DUTY HELP ROLL CLOSED

Length of the distance along which the contour roller moves along in the lowered state



Roller

The parameter changes the length of the distance along which the roller transports the sewing piece from the A machine to the pick-up point of the cross transport or, at the B machine, from the worktable to the staker.

25 STITCH TILL ROLLER DOWN

Sewing distance after sewing start before the roller is lowered; only required for heavy materials

26 STITCH WITH ROLLER DOWN

Length of the distance along which the roller transports

D.3 Programming

27 TILL ROLLER STOP/CUTTER

Distance along which the roller travels before it stops for chain cutting

28 ROLLER STOP DURATION

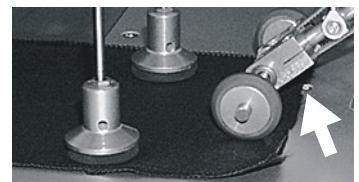
Period during which the roller stops for chain cutting

29 ROLLER SPEED [99]

Rotating speed of the roller

30 ROLLING DISTANCE [18]

Major parameter/basic setting of the roller transport distance for transferring the sewing piece to the cross transport. The retaining screw is the reference point



Cross transport

Use this value to set the transport distance from the A machine to the B machine.

37 CLAMP TRANSFER POSITION

The point where the cross transport picks up the sewing piece from the A machine, i.e. the distance between the cross transport initiator and the left edge of the stamp mounting

38 CLAMP WAITING POSITION

The wait position where the cross transport stops before the B machine

39 CLAMP STOP AFTER PH.14

Major parameter/basic setting of the transport distance from the wait position before the swing arm picks up the sewing piece at the B machine

40 BLIND SECTION OF PH.14

Photocell response delay for compensating gaps in the sewing piece

41 CLAMP SPEED A -> B HEAD

Cross transport travel speed

42 CLAMP SPEED B -> A HEAD

Cross transport return speed

43 WAIT POS->TO SEWING.POS

Distance along which the sewing piece is sewn in the B machine before the following sewing piece moves from the wait position to the swing arm (photocell 15 is the reference point)

D.3 Programming



Sewing speed at waist curve

The settings determine the puller speed for the sewing of the waist curve. Depending on the waist curvature, a puller speed that has been adapted accordingly can be set.

20 SLOW BY WAIST CURVE

Major parameter/basic setting for puller speed

21 TILL SPEED SLOW

Distance along which sewing is performed at normal puller speed before speed is reduced in the waist curve area (photocell 15 is the reference point)

22 DURATION OF SLOW SPEED

Distance along which the waist curve sewing speed is reduced

23 PULLER AFTER SLOW SPEED

Remaining distance along which puller speed is increased to normal level

35 TILL BLOWING

Length of the distance to the end of seam that is sensed at the B machine for blowing off the waist (from photocell 15 to photocell 2)

10 DURATION OF BLOWING

Period during which the fly is blown off

11 TILL ARM SWINGS

Distance from beginning of sewing at the B machine before the arm swings in (photocell 15 is the reference point)

44 PULLER SWINGING

Only required for inseam;
Enable function = 01
Disable function = 00



Settings for A machine



Settings for B machine

The settings determine the sewing behavior of the A and B machines.

01 SLOW SEWING SPEED

Rotational speed at reduced sewing speed during start distance (see parameter 03)

02 FAST SEWING SPEED

Rotational speed at normal sewing speed

03 SLOW SEWING STITCHES

Distance of the slow sewing start

D.3 Programming

05 CONTOUR GUIDE UP

Sewing distance traveled at beginning of sewing before the contour guide is lowered

06 TILL TABLE BLOWING ON

Sewing distance traveled at beginning of sewing before the worktable nozzles are supplied with compressed air

07 DURATION TABLE BLOWING [70]

Distance along which the compressed air transports a sewing piece

09 REDUCED SPEED

Reduced rotational speed that is enabled for the differential transport using the function SLOW (photocell 12 is the reference point for the A machine, photocell 13 is the reference point for the B machine)

■ Moving the cross transport manually

Use this function for the manual transport of a sewing piece from the A machine to the B machine. When the key is pressed, the two cross transport stamps are lowered, and the transport moves to the pick-up position at the B machine; from there, the remaining part of the machine cycle is initiated automatically and continued.

1. Position the sewing piece below the two stamps.

2. Start the cross transport manually:

- Press the **F7** key



The cross transport moves to the wait position before the B machine.

3. The automatic machine cycle continues.

■ Passing thread through needles

This function allows the easy passing of thread through the needles on both sewing heads. The photocells are switched off so that the sewing units are disabled. The pressure foot is lowered, the transport units are raised.

1. Prepare the sewing unit for the passing of the thread:

- Press the **F8** key



2. Pass the thread through needle and picker.

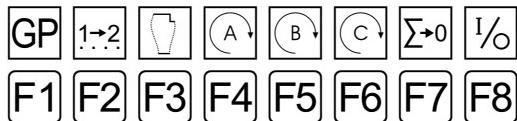
3. Enable the sewing unit:

- Press the **F8** key

D.3 Programming

■ Functions on access level 2

The function keys on access level 2 are assigned to the symbols that are shown on the display. These symbols are only visible when access level 2 has been selected. They are displayed inverted when the machine function that they represent has been disabled in the marked seam of the sewing program.



- F1 List of basic parameters
- F2 Activate/deactivate the seams of a sewing program
- F3 Enable preseams
- F4 Activate A machine manually
- F5 Activate B machine manually
- F6 Activate C machine (optional) manually
- F7 Reset the day counter to zero
- F8 Display inputs/outputs

■ Basic parameters

Basic parameters are values that control the basic functions of the machine. Changes to basic parameters will result in changes of all stored sewing programs.



NOTE - Modifications of basic parameters

The basic parameters of the machine have been fitted at the factory to match one another perfectly. Improper modification of the values can impair the processing quality or even damage machine components.

1. Request the basic parameter list:



- Press the **F1** key

2. To move up or down in the parameter list:

- Press the **↑** or **↓** key

3. Activate the parameter input field:

- Press the **ENT** key

D.3 Programming

4. Change the value:

- Press the or key

or enter a two-digit or three-digit value using the numeric keypad. Input sequence: Hundreds digit, tens digit, units digit.

5. Confirm input:

- Press the key

6. Exit menu and return to access level 2:

- Press the key

7. Return to access level 1:

- Press the key

The following basic parameters can be modified:

01 PHOTOCELL REACTION TIME

Delay between insertion process (photocell darkens) and beginning of sewing

02 PHOTOCELL -> FOOT DOWN

Duration before pressure foot is lowered and chain cutting function is activated (this setting depends on the sewing material)

03 FOOT DOWN -> SEWING

Duration during which top thread slackens before being retensioned

04 CHAIN CUT.SUCTION (BEG.)

Duration of chain cutting function at beginning of sewing, longer suction period required for three-thread machines; switch-off for saving energy

05 CHAIN OFF STITCHES

Distance for postsewing stitches when the sewing piece is removed from the sewing unit during the sewing process

06 CHAIN CUT.SUCTION (END)

Duration of chain cutting function at end of sewing; switch-off for saving energy

07 SEWING STOP -> FOOT UP

Period during which the top thread slackens at the end of the seam

08 PHOTOCELL BLOCKED (END)

Time delay for insertion of new sewing piece (blocking period after photocell brightens)

D.3

Programming

09 A-M ROLLER STOP WITH PH.

Switching state of photocell 17

01 Enable function

00 Disable function

10 ROLLER WAITING (MANUEL)

Period during which the roller is lowered for manual sewing, secures sewing piece after end of sewing

12 ROLLER UP -> CLAMP MOVE [0..1]

Time delay after the roller is raised before the cross transport starts

13 CLAMP STOP -> PLUNCH DOWN

Time delay after the cross transport stops before the swing arm stamp is lowered at the transfer position

14 PLUNCH DOWN -> CLAMP OPEN

Time delay after the swing arm is lowered before the cross transport stamp is lifted

15 CLAMP OPEN -> RETURN

Time delay after the transport stamp is lifted before the cross transport returns

16 TILL SWINGING IN...

Time delay before the swing arm swings in

17 SWING ARM IN -> FOOT DOWN

Time delay after the sewing piece darkens the photocell before the pressure foot is lowered (if duration is excessive, the sewing piece may be pulled out of the contour guide by its own weight)

18 PHOTOCELL -> STAMP OPEN

Time delay after the photocell (13) detects the sewing piece before the swing arm stamp is lifted

21 STACKER IMPULS DURATION

Duration of the stacker pulse (must be long enough for the roller to be lifted)

22 A-HEAD THREAD MON. SENS.

Sensitivity of the thread monitor at the A machine (setting depends on thread that is used)

23 B-HEAD THREAD MON. SENS.

Sensitivity of the thread monitor at the B machine (setting depends on thread that is used)

D.3 Programming

24 SENSING TIME CONTOUR ...

Contour control sensing time between fast-slow or slow-fast
00 Photocell 11/16 bright, puller lifted,
Photocell 11/16 dark, puller lowered
01 Puller always lowered (photocell 11/16 bright, slow,
Photocell 11/16 dark, fast

25 A-HEAD POSITION UP

EFKA position A machine, needle position at the end of the seam
(needle-up position)

26 B-HEAD POSITION UP

EFKA position B machine, needle position at the end of the seam
(needle-up position)

27 C-HEAD POSITION UP

EFKA position C machine, needle position at the end of the seam
(needle-up position)

29 C-HEAD ON/OFF MODUS...

Switch C machine on/off in combination with bonding station
00 C machine and bonding station off
01 C machine off, bonding station on
02 C machine on, bonding station off
03 C machine on, bonding station on
For systems without C machine, the bonding station must be switched on (01)

30 C-HEAD SEWING SPEED

Sewing speed of the C machine

31 C-PHOTOCELL -> FOOT DOWN

Time delay after the photocell detects the sewing piece before the pressure foot is lowered and chain cutting is activated

32 C-FOOT DOWN -> SEWING

Time delay after the pressure foot has been lowered before the start of sewing

33 C-CHAIN OFF TIME

Number of postsewing stitches that have to be sewn after the sewing piece has been sewn (must be fit to match for variable stitch length)

34 C-CHAINING AT SEAM END

Duration of chain cutting function at the end of the seam, switch off for energy saving

35 C-SEWING STOP -> FOOT UP

Time delay for lifting the pressure foot after the postsewing stitches

36 C-PHOTOCELL BLOCK TIME

Time delay for inserting a new sewing piece

D.3 Programming

37 C-CLAMP CLOSE ->FUSER UP

Time delay after the bonding clamp has closed before the bonding stamp opens (bonding duration depends on the material that is used)

39 A-HEAD STITCH LENGTH ...

Stitch length of the seam at the A machine, must be fit to match the mechanical stitch length setting (puller speed should be set to medium range, approx 50)

40 B-HEAD STITCH LENGTH ...

Stitch length of the seam at the A machine (see parameter 39)

41 TOP FEEDING MAX POS.

Maximal fullness, value must not be changed

42 DIFFERENTIAL MAX POS.

Maximal fullness, value must not be changed

■ Enabling/disabling a seam in a sewing program

In a sewing program, individual seams can be disabled. A disabled seam is not permanently erased; it can always be reenabled, if required. This function affects only the currently selected sewing program. You should always note the current setting as a modified sewing program does not indicate which seams are disabled.

1. Select the SEWING SEQUENCE function:



- Press the **F2** key

2. Position the cursor on the number of the seam that is to be disabled:

- Press the **←** or **→** key

3. Disable seam:

- Press the **0** key at the numeric keypad

4. Confirm change:

- Press the **P** key

On the display, the seam number disappears from the sewing sequence.

To reenable the seam:

1. Select the SEWING SEQUENCE function:



- Press the **F2** key

D.3 Programming

2. Determine the position of the seam in the sewing sequence. Position the cursor on the number of the seam after which the disabled seam is to be sewn again:

- Press the  or  key

3. Enable seam:

- Enter the seam number using the numeric keypad

4. Confirm change:

- Press the  key

The display shows the seam number in the seam sequence.

■ Preseams

The A/C machine can be set for processing the preseams (waist seam, inseam and hem seam). This settings are effective only if the preseams are enabled.

Selecting the short seam parameter list:



- Press the  key

1. HEM SEAM SPEED

Sewing speed

SEAM TOP FEEDING

Basic setting for fullness

SEAM DIFFERENTIAL

Basic setting for fullness

PULLER ON/OFF

Switch puller on/off

01 Enable function

00 Disable function

2. WAIST SEAM SPEED

Sewing speed

HEM TOP FEEDING

Basic setting for fullness

HEM DIFFERENTIAL

Basic setting for fullness

PULLER ON/OFF

Switch puller on/off

01 Enable function

00 Disable function

D.3 Programming

3. INSEAM SPEED

Sewing speed

INSEAM TOP FEEDING

Basic setting for fullness

inseam DIFFERENTIAL

Basic setting for fullness

PULLER ON/OFF

Switch puller on/off

01 Enable function

00 Disable function

Basic setting for fullness:

1. To move up or down in the parameter list:

- Press the or key

2. Activate the parameter input field:

- Press the key

3. Modify the value:

- Press the or key

or enter a two-digit or three-digit value using the numeric keypad. Input sequence: Hundreds digit, tens digit, units digit.

4. Confirm input:

- Press the key

5. Exit menu and return to access level 2:

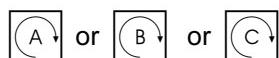
- Press the key

6. Return to access level 1:

- Press the key

■ Reducing the machine sewing speed:

The A, B, and C machines can be activated manually.



1. Select the function:

- Keep the or or key depressed

The corresponding machine will operate as long as the function key is depressed.

D.3 Programming

■ Resetting the day counter

This function is used to reset the day counter to zero before a new production cycle or after a completed cycle.

1. Select the function for resetting the day counter:



- Press the **F7** key for approx 3 seconds

The day counter is reset to zero.

2. Confirm reset and return to access level 1:

- Press the **P** key

Display: $\Sigma = 0000$

■ Input/output test

You can use this function for selecting the inputs and outputs of the machine control for troubleshooting and for testing individual machine operations.

The outputs (OUT) are selected and tested separately. The corresponding inputs (INP) are displayed for the active outputs.

Additionally, the selected output can be switched intermittently.

Activated inputs/outputs are marked with highlighted numbers.

INP:

01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

OUT:

01	02	03	04	05	06	07	08	09	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

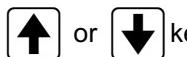
D.3 Programming

1. Select function for resetting inputs/outputs:



- Press the **F8** key

2. Select number line:



- Press the **↑** or **↓** key
3. Mark output number by moving the corresponding function number using the cursor. The cursor now has the shape of an arrow.
- Press the **←** or **→** key

4. Activate output:

- Press the **ENT** key

The output number is highlighted in black. The output is active.

5. Deactivate output:

- Press the **ENT** key

Switching outputs to intermittent operation:

1. Mark output number using the cursor.

- Press the **ENT** key for approx 3 seconds

The function number is highlighted in black and flashes. The output switches intermittently.

2. Switch off intermittent operation of output:

- Press the **ENT** key

The function number is highlighted steadily in black again. The output is still active.

3. Deactivate output:

- Press the **ENT** key

D.3 Programming

Input/output functions

Valve	Output No.	
Y 01	01	Pressure foot up C
Y 03	03	Lining clamp down
Y 04	04	Bonding station down
Y 05	05	Chain/dirt aspiration C
Y 09	09	Cross transport stamp A
Y 10	10	Pressure foot up
Y 12	12	Chain cutting A
Y 13	13	Table blowing A
Y 14	14	Tension blowing A
Y 15	15	Dirt aspiration A
Y 16	16	Contour guide down A
Y 17	17	Puller down A
Y 18	18	Roller down A
Y 19	19	Assist roller A
Y 20	20	Pressure foot up B
Y 22	22	Chain cutting B
Y 23	23	Table blowing B
Y 24	24	Tension blowing B
Y 25	25	Dirt aspiration B
Y 26	26	Contour guide down B
Y 27	27	Puller down B
Y 28	28	Roller down B
Y 31	31	Inseam blowing B
Y 32	32	Stacker start
Y 33	33	Swing arm stamp down
Y 34	34	Swing arm in
Y 35	35	Stacker movement
Y 36	36	Transport to A + B
Y 37	37	Arm swinging
Y 38	38	Assist roller B
Y 39	39	Puller swinging

Switch	Input No.	
ES 01		Cross transport
ES 02		Swing arm
ES		Not used
ES 04		Lining clamp
ES 05		Bonding start
ES 08		Thread monitor A
ES 09		Thread monitor B
ES 10		Photocell C machine
ES 11		Photocell contour control A
ES 12		Photocell program start A
ES 13		Photocell program start B
ES 14		Photocell cross transport stop
ES 15		Photocell protective strut
ES 16		Photocell contour control B
ES 17		Photocell roller stop A

D.3 Programming

3.2 Programming menus

You can use the programming menus for programming sewing programs and the pertaining seams.

Basically, it is possible to create entirely new sewing programs; however, it is easier to:

- copy a factory-programmed sewing program to a free location in the memory and to modify this program in accordance with the production requirements,
- copy an already modified sewing program to a free location in the memory and to modify it further in accordance with the intended purpose.

For creating a new sewing program, the following working steps are required:

1. Occupy free memory.
2. Add new seams or copy existing seams into a sewing program.
3. Configure seams (as required by production).



NOTE - Backward scrolling in program levels!

When the programming menus are selected, the menu used last is always displayed. This level is indicated by the number (1) placed in front of the functions. For selecting certain functions, you may have to scroll backward in the programming and service menus.

- Select the programming menus:
 - Press the key
- Scroll backward in programming menus:
 - Press the key

■ Occupying free memory

Sewing programs are stored in the memory (**M**).

The program control memory can contain up to 20 sewing programs (**M 01-M 20**). At the factory, sewing programs are programmed to memory locations **M 01**, **M 02** and **M 03**.

1. Request free memory location:

- Taste drücken

2. Enter two-digit numeric description using the numeric keypad.

D.3 Programming

■ Copying a seam into a sewing program

Existing seams can be copied into the sewing program and then be modified in accordance with the specific application. This procedure is usually easier and quicker as the copied seam already contains sewing functions and parameters required for the new seam. The programming always refers to the currently selected sewing program.

1. Select programming menus:
 - Press the **P** key
2. Select the INITIAL PARAMETER function:
 - Press the **F5** key

Programming level 2 is displayed.
3. Select the COPY FROM SEAM NO. function:
 - Press the **F3** key
4. Enter the number of the seam to be copied into the input field.
5. Confirm copy process:
 - Press the **ENT** key
6. The display shows * O.K. PLEASE WAIT* to indicate that the copy process has been successfully completed.
Then, the seam number is shown in the display field of the sewing program.

■ Modifying a sewing program seam

The sewing parameters that were changed as a result of the copy process can now be fit to match the production process. The sewing parameters of a sewing programs can be changed separately for the A and B machines in three stages:

1. Quick change of the major parameters for a sewing function by using the input fields.
2. Access to the complete parameter list of a sewing function.
3. Enabling or disabling of a sewing function or machine function.

See also „Modifying sewing parameters/sewing functions“ in Section 3.1., „Operational menus“.

D.3 Programming

■ Erasing a sewing program seam

A sewing program (e.g. M 01) consists of several seams. The content of these seams, i.e. the sewing parameters, can be erased.

1. Select the programming menus:

- Press the **P** key

2. Select the INITIAL PARAMETER function:

- Press the **F1** key

Programming level 2 is displayed.

3. Select the ERASE SEAM function:

- Press the **F4** key

4. Enter the number of the seam into the input field.

5. Start erasure:

- Press the **P** key

The display shows the safety prompt * ARE YOU SURE?*.

6. Confirm erasure:

- Press the **ENT** key

The display shows * O.K. PLEASE WAIT* to indicate that the erasure has been successfully completed.

D.3 Programming

■ Storage functions

The program control contains several functions for storing sewing programs or seams to the memory card. Sewing programs or seams stored on the card can also be copied to the storage medium of the operating panel.



NOTE - Data backup!

A faulty EPROM or microprocessor of the machine control may result in the loss of data. Therefore, all sewing programs or the individual seams should be copied to the memory card at regular intervals.

Do not use the supplied memory card that contains the standard sewing programs for data backup!

■ Formatting the memory card

If additional memory cards (optional) are used for data backup, they must be formatted before they can be used.

1. Insert the memory card into the slot on the operating panel.

2. Select the programming menus:

- Press the **P** key

3. Select the MEMORY CARD function:

- Press the **F2** key

4. Select the MEMORY CARD FORMAT function:

- Press the **F5** key

The display shows the confirmation prompt * ARE YOU SURE?*.

5. Confirm selection:

- Press the **ENT** key

6. The display shows * O.K. PLEASE WAIT* until the formatting process has been completed.

D.3 Programming

■ Data backup to memory card

You can either store individual seams or all sewing programs to the memory card.

1. Insert the memory card into the slot on the operating panel.
2. Select the programming menus:
 - Press the **P** key
3. Select the MEMORY CARD function:
 - Press the **F2** key
4. To store **the selected seam**, select the CURRENT SEAM > CARD-function:
 - Press the **F1** keyor
5. To store **all sewing programs**, select the ALL VARIABLES – > CARD function:
 - Press the **F3** key
6. Confirm the selection:
 - Press the **ENT** key
7. The display shows * O.K. PLEASE WAIT* until the data transmission has been completed.

■ Copying data to the storage medium of the operating panel

Individual seams or all sewing programs stored on the memory card can be copied to the operating panel.



NOTE - Overwriting data!

If all sewing programs on the card are copied to the operating panel, all data (even seams that have been modified before) will be overwritten.
Therefore, any changes to seams should immediately be stored individually to the memory card.

D.3 Programming

1. Insert the memory card into the slot on the operating panel.
2. Select the programming menus:
 - Press the **P** key
3. Select the MEMORY CARD function:
 - Press the **F2** key
4. To overwrite **the selected seam shown on the display**, select the CARD – > CURRENT SEAM function:
 - Press the **F2** keyor
 - Press the **F4** key
5. To overwrite **all sewing programs**, select the CARD – > ALL VARIABLES function:
 - Press the **F4** key
6. Confirm the selection:
 - Press the **ENT** key
7. The display shows * O.K. PLEASE WAIT* until the data transmission has been completed.

D.3 Programming

3.3 Service menus

The service menus have functions for setting up and testing the machine. These functions are selectable in two menus:

- **Diagnostic (F2) with the pertaining test programs:**
Sewing motor, clamp motor, corner knife motor, center knife motor, roller motor
- **Additional programs (F4)**



NOTE - Backward scrolling in program levels!

When the programming menus are selected, the menu used last is always displayed. This level is indicated by the number (1) placed in front of the functions. For selecting certain functions, you may have to scroll backward in the programming and service menus.

- To select service menus:
 - Press the key
- To scroll back in service menus:
 - Press the key

■ Service code

The functions in the service menus are protected by a dual-stage access privilege:

- First, enter the machine code (50190) for copying sewing parameters, basic parameters, and sewing programs and for selecting some of the diagnostics programs.
- Select the menu again and enter the security code for selecting additional programs. This code must be requested from the Service Department of Beisler GmbH.

1. Select the programming menus:

- Press the key

2. Select the SERVICE CODE function:

- Press the key

3. Enter code on the numeric keypad:

4. Confirm selection:

- Press the key

D.3 Programming

■ Diagnostics

The DIAGNOSTIC menu contains service functions for testing machine assemblies and initiators that control them.

1. Select the programming menus:

- Press the **P** key

2. Select the DIAGNOSTIC function:

- Press the **F3** key

3. Select the test functions:



NOTE - Diagnostics functions!

These service functions should only be performed as instructed by the Service Department of Beisler GmbH or in cooperation with experienced service personnel members.



CAUTION - Damage to the machine!

During these tests, individual machine assemblies or machine cycles are started. If components are partially or completely removed, machine components may be damaged.

Perform tests only when the machine is at operating temperature!

F1 SERVICE TESTS

These menus are only accessible after the service code has been entered and must only be selected as instructed by authorized service personnel members.

F2 CLAMP TRANSPORT

These functions are used to check the travel characteristics of the cross transport.

F1 CLAMP MOTOR STEPS

All positions of the cross transport are approached in sequence.

D.3

Programming

F2 CLAMP MOTOR SPEED

The nominal speed of the stepper motor is compared to the actual motor speed.

1. Enter the desired speed at the numeric keypad.
2. Confirm input and start measurement:

- Press the  key

The motor starts running, the actual speed is measured and displayed.

3. Complete test:

- Press the  key

F3 CL.MOT. DURATION TEST

The stepper motor of the cross transport starts running. The reversal position of the cross transport is checked in a duration test.

1. Start the test:

- Press the  key

3. Complete the test:

- Press the  key

F3 A-HEAD TESTS

F4 B-HEAD TESTS

F5 C-HEAD TESTS

These functions are used to check the sewing motors and the pertaining stepper motors for the sewing and transport units. The test routines are identical for the A and B machines. The menu C-HEAD TESTS merely contains a routine that controls the sewing motor.

F1 SEWING MOTOR CONTROL

The nominal speed of the stepper motor is compared to the actual motor speed.

1. Enter the desired speed at the numeric keypad.
2. Confirm input and start measurement:

- Press the  key

The motor starts running, the actual speed is measured and displayed.

3. Complete test:

- Press the  key

D.3 Programming

The functions F2-F5 are used to check the stepper motors in a duration test.

1. Start the test:

- Press the **ENT** key

3. Complete the test:

- Press the **P** key

F2 SEW.MOTOR+PULLER
Stepper motor test.

F3 ROLLER
Roller distance test.

F4 TOP FEEDING
Top transport function test.

F5 DIFFERENTIAL
Differential transport function test.

■ Selecting the language

The language for the menu items and for the text shown at the display can be selected.

1. Select the programming menus:

- Press the **P** key

2. Select the ADDITIONAL PROGRAMS function:

- Press the **F5** key

3. Select the CHOOSE LANGUAGE function:

- Press the **F3** key

4. Select the desired language.

D.3 Programming

■ Total piece counter

The total number of the sewing pieces processed with the machine is edited in a counter function. This counter cannot be reset to zero.

1. Select the programming menus:
 - Press the **P** key
2. Select the ADDITIONAL PROGRAMS function:
 - Press the **F5** key
3. Select the PIECE COUNTER function:
 - Press the **F2** key
4. Return to access level 1:
 - Press the **P** key